Bottomfish and the British Columbia Recreational Fishery: An Analysis of Angler Fishing Habits and Resource Expectations

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BOTTOMFISH AND THE BRITISH COLUMBIA RECREATIONAL FISHERY: AN ANALYSIS OF ANGLER FISHING HABITS AND RESOURCE EXPECTATIONS

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ABSTRACT

McElderry, H., M. Matheusik, and L. J. Richards. 1985. Bottomfish and the British Columbia recreational fishery: An analysis of angler use habits and resource expectations. Can. MS Rep. Fish. Aquat. Sci. 1802: 116 p.

Results are presented for a survey on the characteristics of bottomfishing in the British Columbia recreational fishery and the differences in angler motivation between salmon fishing and bottomfishing. The survey was conducted at the 1984 Vancouver Boat and Sportsman's Show and 70% (n=932) of the respondents were from the Greater Vancouver area. A disproportionate number of males and highly committed anglers were included, in comparison with the overall B.C. angler population. Differences in personal and fishing characteristics, catch habits, resource preferences and fishing motivations were compared by grouping the respondents according to level of commitment to saltwater fishing, age and principal type of fishing. The respondents were classified as mixed anglers (49%) who fished for both salmon and bottomfish, or exclusive salmon (47%) or bottomfish (4%) anglers. Bottomfishing effort was low in proportion to total effort for mixed anglers, although 59% indicated that they often switch between salmon and bottomfishing on a typical day, and 73% switch when salmon fishing is poor. For many of these anglers bottomfishing is an unspecialized activity, although 38% indicated that they were selective for the types of fish caught and 44% use some form of specialized fishing gear. The survey results support the concept that highly committed anglers are more satisfied with their fishing experiences and attach more importance to aspects that involve pursuit and catch rather than consumptive aspects. All groups of anglers rated environmental and social motivations for fishing as more important than aspects of catch, food value and availability of services.

RÉSUMÉ

McElderry, H., M. Matheusik, and L. J. Richards. 1985. Bottomfish and the British Columbia recreational fishery: An analysis of angler use habits and resource expectations. Can. MS Rep. Fish. Aquat. Sci. 1802: 116 p.

On présente les résultats d'une enquête sur les caractéristiques de la pêche à la ligne des poissons de fond dans le cadre de la pêche sportive en Colombie-Britannique et les différences observées dans la motivation des pêcheurs à la ligne entre la pêche du saumon et la pêche des poissons de fond. L'enquête a été réalisée au salon nautique et des sports 1984 de Vancouver et 70 % (n = 932) des répondants venaient de la région de Vancouver. L'étude englobait un nombre disproportionné d'hommes et de mordus de la pêche, par comparaison avec l'ensemble des pêcheurs à la ligne de la C.-B. On a comparé les différences observées dans les caractéristiques individuelles et les méthodes de pêche, les modes de capture, les préférences en matière de ressource et la motivation en groupant les répondants suivant le degré de participation à la pêche en eau salée, l'âge et le type principal de pêche. On a classé les répondants en trois catégories: les pêcheurs mixtes (49 %) soit ceux qui pêchaient aussi bien le saumon que les poissons de fond, les pêcheurs de saumon (47 %) et les pêcheurs de poissons de fond (4 %). L'effort de pêche consacré aux poissons de fond était faible par rapport à l'effort total des pêcheurs mixtes, bien que 59 % aient indiqué qu'au cours d'une journée typique de pêche, ils passent souvent d'un type de pêche à l'autre, et 73 % changent quand la pêche de saumon n'est pas bonne. Pour bon nombre de ces pêcheurs à la ligne, la pêche du poisson de fond représente une activité non spécialisée, quoique 38 % aient indiqué qu'ils choisissaient les sortes de poissons capturés et 44 % disaient se servir d'un engin de pêche spécialisé quelconque. Les résultats de l'enquête confirment que les mordus de la pêche sont plus satisfaits de leurs expériences de pêche et attachent plus d'importance aux aspects de la poursuite et de la capture qu'à ceux de la consommation. Tous les groupes de pêcheurs ont indiqué que les motivations environnementale et sociale étaient plus importantes que les aspects liés à la capture, à la valeur alimentaire et à la disponibilité de services.

INTRODUCTION

As far as the public is concerned, the British Columbia recreational fishery is a salmon fishery. The media provides regular updates on where the best salmon fishing occurs as well as the types of gear to use, and the kinds and sizes of fish caught. Other fishing literature such as guidebooks and magazine articles refer almost solely to the topic of salmon. It is understandable that the focus of a recreational fishery is directed toward the most prized fish. However, a variety of other species are also harvested. These are primarily bottomfish such as rockfish, lingcod, greenling, halibut, and other types of flatfish. Rockfish and lingcod accounted for 38% of the 1982 recreational catch, or 480,000 fish (Tidal Diary Program unpub. data). Consequently, it is more appropriate to consider the recreational fishery as a mixed species fishery.

Here we describe the role of bottomfish in the mixed recreational fishery. Specifically, we ask what are the characteristics of bottomfishing, and for anglers that fish for both salmon and bottomfish, what factors influence the type of fishing performed. Information on these questions is important for predicting trends in the recreational fishery as the availability of salmon declines, and as a basis for conservation of the bottomfish stocks.

MATERIALS AND METHODS

RESEARCH DESIGN

The population for this study was defined as all participants in the B.C. saltwater recreational fishery. Because of time and budgetary considerations, however, the sample population was restricted to saltwater anglers who attended the 1984 International Boat and Sportsman's Show at Vancouver's B.C. Place stadium. This event, which took place over a 10-day period from 4 to 12 February, 1984, was attended by over 100,000 people (Canadian National Sportsman's Show, pers. comm.). It was expected that many of those who attended would be participants in the saltwater recreational fishery.

A self-administered questionnaire format was used. This survey method is cheap, fast to administer, appropriate for large volumes of information, and maintains anonymity to sensitive or personal issues. It also tends to result in fewer misunderstood questions. There is, however, a greater tendency for incomplete questionnaires with this method than with surveys conducted by personal interview.

Survey questions were designed after a literature review and discussions with professionals in the field of recreational fishing in B.C. A multi-disciplinary approach was used that involved both biological and sociological aspects. Following Bryan (1976), Driver (1976), and Ditton (1977), questions were included to examine:

1. Social demographic characteristics,
2. Fish preferences, management practices and regulations,
3. Satisfaction and motivations of fishing experiences,
4. Resource expectations and gear selection practices.

Previous survey formats such as Cumming (1979), Cox (1977), Bryan (1974), Ditton and Fedler (1983) and TREC Analysis, Inc. (1984) were used as a guide. Care was given to the design and layout to provide a simple and logical format. The completed questionnaire (Appendix A) is described in the following sections.

Fishing Characteristics

This section included questions on the level of commitment to saltwater fishing, such as skill level, years of fishing experience, driving distance to a boat launch or fishing site, membership in a fishing or outdoor club and the number of days fished in 1983. The number of days fished in 1983 was stratified by season to minimize recall bias. Questions were also included on location of residence, time spent using various fishing modes (i.e. shore, pier, private boat, etc.) and the usual fishing social group.

Fishing Preferences

This section determined general preferences for the types of fish caught. The most important species in the recreational fishery were divided into 15 groups according to ease of identification. For example, chinook and coho salmon were listed as species while rockfish were grouped as red rockfish (e.g. red snapper) and other rockfish. Additional groups were provided in case the respondent was unable to classify salmon or bottomfish, or caught fish that were not listed. The respondent checked which fish groups were caught and indicated their retention preferences. Preferences were recorded on a three point scale as never, sometimes and always kept (if legal) with values of 1 to 3, respectively. A question on the principal type of fishing in 1983 (salmon, bottomfish, or mixed) was also included and placed after the fish list to ensure that the respondent was familiar with the terminology.

Bottomfishing Aspects

This section consisted of two parts and applied to anglers who fished for bottomfish at some time during 1983. The first part dealt with the proportion of 1983 fishing time targeted at bottomfish, the depth ranges used and the types of specialized gear used for bottomfish. The second part of

this section consisted of 12 statements that compared different aspects of fishing for salmon and bottomfish. Respondents expressed their opinion on each statement on a 5 point bipolar scale from 1 (strongly disagree) to 5 (strongly agree) with 3 as neutral or no opinion.

Location of Fishing

A map of the Strait of Georgia was provided and respondents were requested to indicate with an "X" where they fished in 1983. They were also requested to circle the "X" where most of their fishing occurred. This section was not analysed.

Recreational Experiences

This section examined the relative importance of certain types of experiences that may be encountered while fishing. These included catching fish, relaxation, excitement, being with others, being outdoors and developing skills. Most experience statements were from a set of measures developed by Driver (1977) that are commonly applied in recreational research. Respondents ranked the importance of these experiences to a satisfactory fishing trip on a 5 point Likert scale from 1 (not at all) to 5 (extremely important) (Kerlinger 1973).

Personal Characteristics

This section characterized the respondent by basic socio-economic criteria such as age, sex, marital status, occupation, and income.

Comments

The last section of the questionnaire allowed the respondent to comment on any topic.

PRETEST

The first pretest took place on 28 January 1984 at a boat show in Seattle's Kingdome Stadium. This event was nearly identical to the Vancouver Boat Show in terms of spatial layout and types of exhibits. Interview comments and introductory statements within the questionnaire were slightly altered to make the study relevant to the Washington State audience. One hundred questionnaires were administered by two interviewers in a one-day period. Seventy-five completed and returned questionnaires were analysed to determine the efficiency of layout, clarity of questions and the reliability of the questions themselves.

After several design changes, fifteen questionnaires were administered to customers at a fishing tackle shop in Nanaimo. The results provided a final check on wording and organization.

THE SURVEY

The Vancouver Boat Show survey was conducted during a five-day period between Wednesday, 8 February and the closing day of Sunday, 12 February 1984. Tables were located near one of the major stadium entrances and adjacent to several fishing tackle exhibits and a fly casting pool.

The six interviewers were instructed to approach an individual or group regardless of whether they were thought to be anglers. Every effort was made to eliminate personal bias in respondent selection. The interviewer first politely inquired if they were saltwater anglers and, if so, whether they fished at any time during 1983. If the response to both questions was affirmative the survey was introduced. On-site participation was encouraged, although those people who did not have sufficient time were able to return the questionnaire by mail. Youths (less than 15 years of age) were avoided as the questionnaire was too complex for this age group. If both members of a couple were anglers, the interviewer encouraged each to participate separately.

DATA CODING

A total of 1,285 questionnaires were administered to the boat show participants. Of these, 971 (75.6%) were returned during the survey and 15 (1.2%) by mail. Questionnaires were rejected if the first two sections were not completed. Responses to the scale items in Sections 3 and 5 were rejected if the items were uniformly answered. There were 932 (72.5%) usable questionnaires.

Residence locations were recorded using a 19 location code adapted from Harrison (1979). Occupation information was generalized into a 10 point code with 1 (laborers) to 5 (professionals). Values greater than 5 represented other occupational categories such as housewife, retired and student (Blau and Duncan 1967). A separate occupational category was used for respondents employed in the recreational fishing industry as these individuals could be over-represented at the boat show.

Unless otherwise indicated, probability values refer to the results of a Chi-square test (Zar 1974). A probability value of less than 5% was considered significant.

RESULTS AND DISCUSSION

THE OVERALL POPULATION

This section describes the overall survey population. Questions on personal characteristics were included for comparison with other studies of the B.C. saltwater fishing population in order to determine sample bias. Various breakdowns of the population are presented in later sections.

Personal Characteristics

Most of the anglers surveyed live within the Greater Vancouver area (Table 1). Vancouver residents constitute 46.3% of the Strait of Georgia angler population according to the Tidal Diary Program (Bijsterveld 1983). Consequently, the Vancouver area was over-represented in the boat show sample by 25%. Most of the remaining anglers surveyed (21.8%) were from other locations around the Strait of Georgia.

The age groups sampled at the boat show were very similar to the age distribution of 1983 licensed saltwater anglers studied by the Tidal Diary Program (Table 2). British Columbia saltwater recreational anglers from these two surveys tend to comprise a larger percentage of the 25-64 age group than has been found in the overall census population (Ministry of Industry and Small Business Development 1983). There is a corresponding decrease in the 15-24 age group. Only anglers 16 years of age or older are required to purchase a license and this may account in part for the discrepancy.

The majority of respondents had household income levels of $15,000 to $59,999 (Table 3). The most frequently listed category was $30,000 to $44,999. There are no comparable data available from the Tidal Diary Program.

From the demographic information on B.C. anglers it appears that saltwater recreational fishing is a male-dominated activity (Canadian Resourcecon Ltd. 1982; Tidal Diary Program unpub. data). Approximately 80% of the licensed anglers in B.C. over the age of 16 are male (Tidal Diary Program unpub. data). The sex ratio of the boat show sample was 88.9% male. This is probably because many of the people approached at the boat show were in couples. Although both fishing members of a couple were encouraged to complete a questionnaire, it was usually filled out by the male only.

Over half of the respondents (54.7%) had technical, university or graduate level education (Table 4). This compares with post-secondary or higher education in 36% of B.C.'s labor force (Ministry of Industry and Small Business Development 1983). The difference may be attributable to the overall saltwater fishing population, or respondent characteristics such as location of residence and level of income. Alternatively, an event such as the boat show may simply attract a more educated audience.

The largest number of respondents (27.0%) were in the technician/service occupation classification followed by the mid (21.9%) and high (18.2%) level management classifications (Table 5). Only 2.1% of the respondents were connected with the recreational fishing industry and many of these were charter boat operators.

Fishing Characteristics

Saltwater recreational fishing in British Columbia is almost entirely a boat-oriented activity (Table 6). Most of the respondents (76%) spent most (>75%) of their fishing time in a private boat. Charter boats were the second most popular primary mode of fishing (2.1%) followed by shore fishing (1.1%) and dock/pier fishing (0.3%). A survey conducted at a boat and sportsman's show may be expected to record a higher percentage of private boat

users than occurs in the angler population. However, 85% of anglers used boats during their total fishing trips according to the Tidal Diary Program (Bijsterveld 1983).

Respondents indicated that their fishing outings were primarily group oriented. Of the seven social groups listed (Table 7), friends (50.6%) and family (38.5%) were predominant. Only 8% of anglers fished alone. Less than 2% of the responses were in the other categories.

Most of the saltwater recreational fishing occurs relatively close to a person's residence, as 71.6% of the respondents reported that they drove less than 30 miles to their fishing site (Table 8). These results were consistent with findings of the Tidal Diary Program (MacGregor 1982). Because of the complex coastal geography of British Columbia however, a better measure of travel distance would include both automobile and boat travel. This analysis was not performed.

Three questions were used to determine the respondent's level of skill. First, they were asked to evaluate their skill level. Most respondents rated themselves as intermediate fishermen (48.7%) with 33.3% advanced, 11.0% beginner, and 7.0% expert (Table 9). The second question examined membership in an outdoor or fishing club and 15% of the respondents belonged to such an organization. This value was identical to the results of the Capilano River Sport Fishing Study (Bryan 1975). The third skill-related question asked the number of years of fishing experience (Table 10). There was a broad range of experience levels among the anglers surveyed and most (76.4%) had fished for more than 10 years.

On average, each respondent fished 33.5 days in 1983. The distribution was skewed such that 20.8% of respondents fished less than 10 days and 30.8% fished more than 40 days (Table 11). Surveys of resident anglers in B.C. by 1975 and 1980 national surveys produced estimates of 13 and 9 annual fishing days per angler (Anon. 1977 and MacGregor 1982, respectively). These results were based on a retrospective question approach. From the Tidal Diary Program, for which participating anglers kept logbooks, MacGregor (1982) estimated that almost two-thirds of the respondents fished five days or less a year and 15% fished more than 10 days. The number of days fished annually by the boat show survey participants was above average and the numbers may be inaccurate.

Most fishing occurred during the summer period (Fig. 1). Most respondents (91.2%) fished at least one day during the summer while about half fished in the fall (56.5%) and winter (44.5%) periods (Fig. 1b). Overall, the summer period accounted for almost half the total annual fishing days, while fall and winter periods combined represented less than 30%. Spring and winter fishing activity is over-represented in this study when compared with two other B.C. studies (Anon. 1977; Bijsterveld 1983). This could result if more avid fishermen participated in the survey.

Catch Habits

There are many different species of fish that a saltwater angler may catch in British Columbia. Identification of these species by the angler

is often unreliable (Bargmann 1981). Less than 10% of the respondents in Bargmann's study were able to correctly identify rockfish, greenling, and perch to the species level from photographs. The percentage of correct identifications increased considerably when the answers were evaluated on the basis of fish groups. The fish groups used here were chosen to minimize misidentifications. The category "not able to classify" was included for anglers who were not familar with the groups as listed. The response to this category was 10.2% and 11.0% for salmon and bottomfish respectively. Apparently most anglers thought they could classify fish groups to the level required, although incorrect identifications may still have occurred.

The term 'catch frequency' will be used here to represent the proportion of anglers who reported that they caught a particular type of fish at least once, irrespective of the actual catch rate. Coho salmon, chinook salmon, lingcod, dogfish and red rockfish were caught by over 50% of the respondents (Table 12). Coho salmon ranked highest in catch frequency (75.2%) at 15 percentage points above the second ranked species. Other rockfish and pink salmon had catch frequencies of 34% and 27% respectively while other groups had values of less than 20%.

Distributions of retention habits by fish group for the three 'kept' levels are shown in Figure 2. Seven fish groups were rarely discarded (if legal) as indicated by 'never kept' frequencies of less than 10% (Table 12). These were lingcod, red rockfish, halibut and the four salmon groups. Five other fish groups including other rockfish, herring, flatfish, greenling and surf perch were intermediate with 'never kept' percentages ranging from 14% to 40%, respectively. Dogfish and sculpins were never kept by 87% and 64% of the survey participants.

Bottomfishing Characteristics

Of the anglers surveyed, 49.5% (n=932) fished for both salmon and bottomfish, 46.8% fished exclusively for salmon, and 3.7% fished exclusively for bottomfish. Hereafter these three groups will be called mixed, salmon, and bottomfish anglers.

Among the mixed anglers, the proportion of time spent bottomfishing during 1983 was relatively small (Table 13). Almost 90% of the respondents indicated that bottomfishing involved less than half of their fishing time and most (58.3%) felt that the proportion of time spent bottomfishing was less than 25%. Fewer than 2% indicated that they spent more than three-quarters of their time specifically bottomfishing.

The general depth range for bottomfishing by mixed and bottomfish anglers was examined using four depth intervals as shown in Table 14. Most bottomfishing effort was divided between the two middle depth intervals. Very little bottomfishing occurred at depths greater than 150 feet (8.8%) or less than 25 feet (3.2%).

Bottomfishing technique may differ from salmon fishing by as little as the lure position in the water column, and the same tackle is often used for both salmon and bottomfish. However, there are several types of specialized bottomfishing gear, (Wilson and Vander Werff 1977; Haw and Buckley

1981). In the boat show survey, 44% of mixed anglers indicated that they used some form of specialized bottomfishing gear. The most common form was simply bait or lures (28.8%) (Table 15). The second most common form was light tackle (15.8%). This may add more 'sport' to bottomfishing (Wilson and Vander Werff 1977). Other important types of specialized bottomfishing gear were heavy tackle (12.8%) and hand lines for deep fishing (10.2%) and depth/fish finders (8.6%).

Resource Opinions

A series of twelve statements were used to examine resource perceptions of the mixed angler group (Table 16, Fig. 3). These statements were separated into three groups, based on subject matter. To simplify the discussion, the response scale was collapsed into three categories: disagree, neutral, and agree.

The first group of statements was intended to examine the criteria by which mixed anglers alternate between the two types of fishing. Most respondents (59.1%) indicated that they often alternate between salmon and bottomfishing on a typical fishing day and 73.1% switch when salmon fishing is poor. However, 30.9% would continue to fish for bottomfish if salmon were easier to catch. These responses suggest that there may be two distinct subgroups of anglers, perhaps seeking bottomfish resources for different reasons.

The second group of statements examined some of the catch and food aspects of the two types of fishing. Most respondents (86.8%) agreed that salmon are more exciting to catch. The response to 'not catching any fish is less satisfying when bottomfishing than salmon fishing' was almost equally divided between all three categories. Some anglers probably expect to catch fish while bottomfishing while others may not distinguish catch expectation by fishing type. The third statement examined whether the food value of bottomfish was more important than the catch experience. Approximately equal numbers of anglers agreed and disagreed, suggesting that the catch and food values of bottomfish appeal to different mixed angler subgroups. When food preferences were compared, 28.6% of the respondents preferred eating bottomfish to salmon, and the reverse was true for 33.6%.

The next group of statements was designed to determine some general perceptions on fish availability and fishing technique. Nearly 43% of mixed type anglers felt that bottomfishing was more productive in the areas they fished while 25.9% disagreed, and 43.2% thought that 'good bottomfishing areas were easier to identify than good salmon fishing areas'. Mixed anglers generally felt that bottomfishing required less skill (63.0%) and salmon fishing required more patience (69.2%). Interestingly, 38.1% responded that the type of fish they caught didn't matter while 33.1% disagreed.

Recreational Experiences

This section examined the importance of a variety of recreational experiences that may occur during a fishing trip. Satisfaction achieved from a fishing trip does not necessarily depend upon catching a fish (Addis and

Erickson 1969; Austins 1972; R. Bryan 1974; Moeller and Engelken 1972). As Bryan (1976) notes, if anglers were only interested in the fish harvest they would be satisfied with catching fish out of their bath tubs. Ditton (1977) identified 36 independent motives which describe experiences that may be sought on a fishing outing. Explicitly stated, fishing means many things to anglers who derive multiple "satisfactions" (Hendee 1974) or realize many different types of satisfying experiences (Driver and Tocher 1970; Driver and Brown 1975) from a fishing trip. (In this study, the terms "motives" or "motivations", "reasons" and "recreational experiences" will be used interchangeably.) Accordingly, it is understandable that anglers do not have to catch fish to feel that the overall fishing outing was satisfying. However, a threshold probability of catch success must exist to justify the fishing effort expended.

The recreational experience items used in this study are shown in Table 17. Also shown are keywords for these statements which will hereafter be used. All items in the questionnaire had mean response values greater than 2, indicating that the experiences were at least slightly important to the overall population. The distribution of the responses among the five categories is shown for each item in Figure 4.

It is apparent that recreational fishing consists of many different dimensions. The release of undersized fish was extremely important (mean response value: 4.29) for most anglers (Fig. 4.1). This item was considerably more important than 'to obtain fish for eating' (2.76) or the experience of 'catching at least one fish' (2.90) or 'catching one or two big fish rather than many smaller fish' (2.75). Apparently most of the respondents attached greater importance to fisheries size regulations than to harvesting the resource for consumption. However, there were fishermen with different views than described by the mean. This was particularly evident in the 'catch' related items (Fig. 4-14; 4-16 to 4-18).

Although experiences concerned with catching fish were important to many anglers, the mean importance was considerably higher for experiences that involved the natural and social setting of a fishing outing, including getting away or escaping pressures such as 'crowds of people' (4.02) or 'the usual demands of life' (3.96). Related to these motives was 'viewing the natural or scenic beauty' (4.01) and 'experiencing tranquility' (3.88). Most respondents preferred to get away to more natural, scenic and less crowded environments as part of their fishing experience. It is not known how these findings relate to the overall fishing population as the majority of respondents were from urban environments.

Motives related to social interaction, especially 'being with others who enjoy similar things' (3.90), were also rated as high, although a number of respondents rated the item 'doing something with the family' as low in importance (Fig. 4.5, 4.9). Hence, many anglers did not attach importance to the family as a fishing social group or did not have families with which to fish (30% were single).

Next in importance were the items that related to elements of achievement. Fishermen tended to rate 'developing skills and abilities' (3.62) and 'experiencing excitement' (3.56) as considerably more important than the motives concerning catch. Next in importance was the item 'for the

challenge or sport' (3.34) although there was a diverse pattern across the response categories (Fig. 4.10). The item 'experiencing new and different things' was rated as moderate to very important (3.33) (Fig. 4.11).

Sharing what fishermen have learned with others (largely friends and family) was moderate to very important (3.26) for most fishermen. Less important was 'testing and using equipment' (2.92) (Fig. 4.15).

Items that received the lowest ranks from the majority of repondents were those relating to 'ease of access' (2.74) and 'accessibility' of services like tackle shops, marinas and restaurants (Fig. 4.19, 4.20). Apparently, most fishermen consider the on-site fishing experiences to be of greater importance than these subservient facilities and services listed.

Overall Satisfaction

Fishermen were asked to indicate how satisfied they were with their overall fishing experience in 1983 on the basis of five categories ranging from not at all to extremely satisfied. Approximately one-third of the respondents (32.4%) rated their 1983 fishing experiences as either very or extremely satisfying (Table 18). Most respondents (44.6%) indicated they were moderately satisfied while the remainder (23%) were either slightly or not satisfied with their fishing experiences.

ANALYSIS BY GROUPS

Results from the overall population provide a description of the average angler. However, perceptions of recreational fishing and of the bottomfish resources varied greatly among the anglers surveyed. In order to examine this variance, responses are compared for different subdivisions of the angler population in the following sections. Anglers were grouped according to type of fishing, level of commitment and age. The results are summarized in Appendix B.

Grouping by Fishing Type

As discussed above, bottomfish anglers represented a small portion of the angler population (3.7%) and there were approximately equal numbers of mixed (49.5%) and salmon anglers (46.8%). While catch differences among these groups are expected, there may also be differences in resource views and expectations. The characteristics of these three groups are compared in the following section.

Personal and fishing characteristics: There were no significant differences among mixed, salmon, and bottomfish anglers in education, occupation and income. A higher frequency (55%) of bottomfish anglers were younger than 34 years of age ($p<0.01$). Age differences between the mixed and salmon angler groups were not significant. Significant differences between

the three groups were found with sex ($p<0.05$) and marital status ($p<0.01$). The proportion of women was nearly identical among salmon (7%) and bottomfish (8%) groups and approximately half that of the mixed fishing group (14%). Marital status characteristics of the mixed and salmon groups were similar while the bottomfish group had a higher frequency of single anglers. This pattern was probably related to group differences in age distribution.

The general fishing characteristics were similar among the three angler groups. There were no significant differences within level of skill, years of fishing experience, number of days fished in 1983 and membership in a fishing or outdoor club. The mode of fishing differed significantly ($p<0.05$) because of the almost exclusive private boat orientation of the mixed angler group. Salmon and bottomfish groups fish used charterboat, dock/pier and shore-oriented modes more often, although fishing by private boat was predominant. The mixed angler group fished more often with family members ($p<.05$). Salmon and bottomfish anglers did not differ in their social group characteristics.

Catch habits: The catch habits of different angler groups were compared by the ranks of the catch frequencies (the proportion of anglers in the group who caught a particular fish at least once). A line connecting the ranks of the catch frequencies for the ten most popular fish types formed a 'catch profile' for the angler group (Fig. 5). Generally, a higher vertical position indicates a more popular, although not necessarily a preferred fish. The vertical distance between adjacent fish on a profile is a measure of the similarities in their catch frequencies. Accordingly, a horizontal line between adjacent fish indicates little difference in catch frequency while a high slope indicates large differences.

The ten most frequently mentioned fish caught by salmon anglers were identical to those by mixed anglers, although the catch frequencies differed. The bottomfish group also shared seven fish in common with the salmon group, with salmon species (coho, chinook, and pink salmon) replaced by bottomfish (halibut, true cod, and sculpin). The salmon and bottomfish group profiles were similar except for the high catch frequency of coho by the salmon group. In contrast, the mixed group had a more diverse catch pattern with high catch frequencies of red rockfish, chinook, dogfish and other rockfish in particular. This pattern was not surprising as bottomfish and salmon anglers limit their effort to one type of fishing, while mixed anglers fish both resources.

The percentage of anglers who never kept the different bottomfish groups decreased from the salmon, to the mixed and bottomfish angler groups. There were no apparent differences in retention of coho, chinook, and pink salmon by the mixed and salmon angler groups (Fig. 6).

Resource opinions: Salmon anglers were requested to bypass this section. Responses from the mixed group were presented in Table 16. Sample size was too low to describe responses for bottomfish anglers.

Angler motivations: Salmon and bottomfishing differed in location, methods, catch rates, characteristics of the catch (the fight) and the types of fish caught. Driver and Knopf (1976) suggested that fishermen who change from one type of fishing to another may have different motivations for each type of fishing. The importance of motivation items related to catch did vary among angler groups (Table 19, Fig. 7). When comparisons were made between the mixed and salmon angler groups, there were significant differences for seven of the nine items. It appeared that factors such as excitement, skill and challenge were more important than the actual catch. The salmon group, in particular, appeared more interested in catching a big fish than in obtaining fish for eating. In contrast, it was more important for the mixed and bottomfish angler groups to obtain at least one fish for eating regardless of its size. All angler groups generally perceived releasing undersized fish as important, although the salmon group placed greater value on this practice.

There were significant differences among angler groups for items that described escaping personal/social and physical pressures (Fig. 7). The salmon group tended to place greater importance on 'getting away' than the mixed or bottomfish group. The bottomfish group valued 'experiencing new and different things' more than the other two groups.

The bottomfish group attached more importance to sharing what they had learned with others than the salmon or mixed group. The other element of companionship, 'doing something with the family' was significantly greater in importance for salmon than bottomfish anglers.

The mean values of the motivation items are displayed in Figure 8 as motivational profiles for each angler type. Anglers generally placed the most importance on recreational experiences associated with the natural environment and with escaping pressures. The mixed and salmon groups distinguished between the nature/escapism aspects of the fishing trip and those elements related to the catch experience. In contrast, the bottomfish group tended to place a similar value on the catch and nature/escapism aspects.

Overall satisfaction from fishing experiences: Most respondents within all three angler groups indicated a moderate level of satisfaction (Table 20). The distributions were significantly different for all three groups ($p<0.01$) as well as for the salmon and mixed angler groups ($p<0.01$), with higher levels of satisfaction by the salmon and bottomfish groups than by the mixed angler group.

Summary by fishing type

1. Average angler age tended to decrease from salmon, to mixed and bottomfish angler groups.

2. The mixed angler group contained a higher percentage of woman anglers while salmon and bottomfishing groups had about equal percentages.

3. The mixed angler group fished more exclusively from private boats while bottomfish and salmon had a greater variety of primary fishing modes.

4. The prevalence of fishing with a family social group was higher among mixed anglers.

5. All three angler groups had a distinct rank order of fish caught.

6. The catch profiles suggested that the mixed angler group had a more varied catch while the catch profiles of the salmon and bottomfish group were similar.

7. The average retention level of fish other than salmon increased from salmon to mixed to bottomfish angler groups.

8. Salmon and bottomfish groups attached more importance to catch-related experiences than mixed anglers.

9. Catching fish to eat was more important for bottomfish and mixed angler groups than for salmon anglers.

10. Salmon anglers attached more importance to using and testing their equipment to catch a big fish than to obtaining fish for eating.

11. While the relative values differed, the importance of releasing undersized fish, getting away, doing something with family, and availability of services decreased from salmon to mixed to bottomfish angler groups.

Grouping by Level of Commitment

Three variables that measure aspects of commitment were used in this analysis. The first and most important variable was the number of days fished during the year, often called avidity. Several studies have documented that a small percentage of fishermen account for most fishing trips (Romsa and Girling 1976; Ditton 1980; MacGregor 1982). The second variable was the number of years that a person had fished. The third variable, skill level, was a personal assessment of fishing ability. Grouping of the responses by avidity, experience and skill was an application of Bryan's (1976) specialization typology to saltwater fishing. According to this typology, as an angler becomes more specialized, greater importance is placed on the level of skill, types of equipment utilized and the level of participation and experience. The degree of angler specialization may also influence the types of recreational experiences considered important and the types of companionship while fishing.

Grouping by Avidity

Respondents were classified into three avidity groups based on the number of days they fished during 1983--less than 20 days, 20 to 39 days, or 40 or more days. The first and largest group (43.9%) included respondents who fished on average less than two days per month. The second group included 25.4% of the respondents. The third group (30.8%) included the most avid respondents who averaged at least one fishing day a week.

Personal and Fishing Characteristics: There were no significant differences among avidity groups with respect to age, marital status, income level, or education. There were differences in sex ($p<0.05$) and occupation ($p<0.05$). The most avid group had a larger proportion of males. Occupational differences among the three groups were mainly due to the sportfishing industry category. Respondents in this category understandably had a high avidity.

The three avidity groups did not differ significantly in fishing characteristics including mode of fishing (i.e. shore, boat, etc.) and the fishing social group. Skill and years of fishing experience increased with avidity level ($p<0.01$). Driving distance decreased with avidity level ($p<0.01$) as more avid anglers tended to fish closer to their place of residence. Those anglers who belonged to a fishing or outdoor club tended to be from the most avid group ($p<0.01$).

Catch habits: The three avidity groups had similar catch profiles (Fig. 9). There were only slight differences in the rank order of fish caught. The differences in height of the profiles corresponded to an increase in catch frequency as avidity increased. There was a comparatively lower catch frequency of other rockfish (rank 6) caught by the low avidity group and a comparatively high catch frequency of coho salmon (rank 1) caught by the middle avidity group. Avidity group probably had little influence on the types of fish caught, although the proportion of anglers who caught these fish increased with avidity.

With the exception of dogfish, pink salmon, greenling and other salmon, the percentage of anglers who never kept fish decreased with an increase in avidity (Fig. 10). The differences among avidity groups were significant for chinook ($p<0.05$), and significant but not related to avidity level for pink salmon ($p<0.05$). There were no avidity-related differences in the retention of dogfish, pink and other salmon. The tendency to discard greenling appeared to increase with avidity.

Resource opinions: Anglers from the different types of fishing groups had similar avidity distributions. Responses for this section were analyzed for mixed anglers only. Differences were apparent among avidity groups for six of the twelve resource opinion statements (Table 21). While all groups generally did not agree with the statement that 'I would not fish for bottomfish if salmon were easier to catch', disagreement was more frequent by the more avid groups ($p<0.05$). Fishing technique, type of equipment, or the bottomfish resource and related experiences were probably more important to the avid angler. The response to the statement 'not catching any fish is less satisfying while bottomfishing than salmon fishing' differed among the avidity groups ($p<0.05$). The response from the high avidity group was polarized, while the middle group was neutral and the low avidity group divided between neutral and agree. There was also a difference in response to the opinion statement that 'bottomfishing requires less skill' ($p<0.05$). Over 50% of all groups agreed with this statement although the level was higher among the less avid group.

Bottomfishing characteristics: There were no significant differences found in the proportion of angling time spent bottomfishing by mixed type anglers in the three avidity groups. There was a positive, but not significant ($p<0.10$) relationship between depth of fishing and avidity; the percentage of anglers who fished at depths greater than 150 feet increased from 4.4% to 11.6% for the low to the high avidity group. The percentages of anglers who used specialized gear differed with avidity ($p<0.01$) with 37%, 34%, and 53% for low, medium, and high avidity groups respectively. There was a greater use of handlines, depth/fish finders and navigational aids by more avid anglers, and a greater use of specialized bait and lures by less avid anglers (Table 22).

Angler motivations: Differences among avidity groups were apparent in motivation for fishing (Table 23; Fig. 11). The high avidity group appeared to be more interested in developing skills and abilities and being challenged while fishing. They also attached more importance to testing and using equipment. All avidity groups rated the catch of at least one fish higher than eat fish or catch one big fish. Hence, the most avid fishermen tended to place greater value on the sport or experience of catching fish than the actual harvest. The avid group also placed a significantly higher value on releasing undersized fish than the other two groups.

The two lower avidity groups had similar values for the mean ranks and rank orders of the motivation items. The most avid group valued experiencing tranquility and 'being with others' significantly more than other avidity groups. The most avid group also attached greater value to experiences that were incidental to the actual catch; both developing skills and the challenge behind the catch were more important to this group than the other avidity groups. The actual consumptive items: 'at least one fish', 'obtain fish for eating' and 'catch big fish' appeared to have less overall importance than the other dimensions of the fishing experience.

Level of satisfaction: Significant differences among the avidity groups were found in their overall satisfaction levels (Table 24). Generally, as the level of avidity increased, there was a greater tendency for anglers to be either very or extremely satisfied with their overall fishing experience.

Summary by avidity group

1. As the level of avidity increased, there was a greater tendency for anglers to be male, have fished more years, have a higher skill level, drive fewer miles to their fishing site or launch site and be a member of a fishing or outdoor club.

2. There were generally no differences among avidity groups on the basis of marital status, education, income, age, social group or mode of fishing (i.e. boat, shore, etc.).

3. There was generally no difference among avidity groups in the types of fish caught.

4. As the level of avidity increased, catch frequency and species retention increased.

5. Specialized gear for bottomfishing was used significantly more by the most avid fishermen; these included hand lines, depth/fish finders and navigational aids.

6. The most avid groups generally disagreed with the statement that they 'would not fish for bottomfish if salmon were easier to catch'.

7. The less avid group generally agreed with the statement that 'not catching any fish is less satisfying when bottomfishing than salmon fishing'.

8. As the level of avidity increased, anglers attached greater value to releasing undersized fish.

9. As the level of avidity increased, anglers attached more importance to the following recreational experiences: being with others who enjoy similar things; experiencing tranquility; developing skills and abilities; seeking challenge or sport; and testing/using their equipment.

10. Most anglers, regardless of avidity, rated elements of nature and escapism as being most important.

11. The level of satisfaction for the 1983 fishing experience increased with avidity level.

Overall, these findings suggest that the least avid group valued the more consumptive aspects of the fishery resource whereas the most avid group valued the pursuit or experience of the catch.

Grouping by Experience

Respondents were divided into three experience levels: less than 10 years (23%), 10 to 29 years (52%) and greater than 30 years' fishing experience (25%). The first experience level (<10 years) consisted of recent entrants to the recreational fishery. Only 10% of the respondents had less than 5 years fishing experience and sample size did not permit finer resolution. Anglers in the intermediate category (10-29 years) had an opportunity to develop personal fishing preferences and techniques irrespective of avidity. The third group (>29 years) had an opportunity to witness longterm patterns in the sport and in the resource.

Personal and fishing characteristics: It was not surprising that there were significant differences in the age distribution of these groups ($p<0.01$) as more years of experience implied an older age. Age differences among the groups probably accounted for differences in marital status, occupation, and level of income (see Grouping by age). The percentage of women anglers was

higher in the lower experience groups. As the sex distribution was independent of age, either the women in the survey population began recreational fishing at an older age or stopped fishing after a short time.

As the number of years of fishing experience increased so did the general level of skill ($p<0.01$) and the number of 1983 fishing days ($p<0.01$). However, older anglers with more fishing experience may have more time available for fishing. There were no significant differences between experience groups in driving distance, mode of fishing, or fishing group. There was a greater tendency to belong to fishing or outdoor clubs as experience increased ($p<0.01$).

Catch habits: There were few differences in fish catch and retention habits among the experience groups. The ten top ranking fish were the same among all three groups, although the rank order of the five top fish was distinctive for the lower experience group (Fig. 13). This was due to the relatively high catch frequency value of dogfish as compared to chinook salmon and lingcod. The three experience groups had similar catch profiles for ranks greater than 5 and the catch profiles of the two high experience levels were nearly identical for all ranks. The lower catch frequency values for the five top fish by the low experience group indicate that these anglers are not as successful in catching these fish groups.

The percentage of anglers who never kept fish tended to decrease with experience for seven out of ten fish groups (Fig. 14). The middle experience level tended to keep chinook and other salmon more often while the low experience group kept other rockfish more often. Differences in retention were significant for coho salmon, dogfish and red rockfish.

Resource opinions: Anglers from the different types of fishing groups had similar distributions of experience levels. Opinion statement responses by mixed type anglers for the three experience groups were similar to those for the avidity groups, although the differences were not as clear. The three experience groups differed in response pattern to four statements (Table 25). Generally, agreement increased among the more experienced anglers to the statements 'bringing bottomfish home to eat is more important than catching them' ($p<0.05$) and 'I like eating bottomfish more than salmon' ($p<0.01$).

Bottomfishing characteristics: There were no significant differences in the time spent on bottomfishing, depths fished or percentage of anglers who used specialized gear for bottomfishing by mixed anglers in the three experience groups.

Fishing motivations: Recreational experience values or motivations change as the outdoor recreationist's experience in a particular activity increases (Hendee and Bryan 1978). In this study, experiencing excitement, in particular, tended to decline in overall importance as the experience level of anglers increased (Table 26, Fig. 15). Excitement appeared to be a dominant motivation for the low experience group. The catch item also tended to

decline in importance with increasing levels of experience. The fact that these less experienced anglers tended to place a greater importance on catching at least one fish and one or two big fish suggested they were more harvest oriented. They also tended to be less selective in the types of fish they catch (see Resource opinions).

The two high experience groups tended to value escapism, nature and companionship more than the low experience group (Fig. 16). The anglers with the most experience also tended to attach more importance to sharing what they have learned with others. The two high experience groups had very similar motivational profiles, while the low experience group was distinctive due to the importance attached to the catch-related items.

Level of satisfaction: Regardless of how many years they had fished, anglers tended to attach a similar level of satisfaction to their overall fishing experience in 1983. Approximately half rated their fishing experience as moderately satisfactory while about 30% were very or extremely satisfied.

Summary by experience group

1. As the level of experience increased, there was a greater tendency for anglers to be male, older, married, and have a higher occupational and income level.

2. More experienced fishermen tended to have a higher skill level, have fished more days during 1983, and be a member of a fishing or outdoor club.

3. There were minor differences among the experience groups in the types of fish caught. The two highest experience groups were the most similar while the less than 10 years experience group had relatively low catch frequency values for the five top ranking fish.

4. Species retention increased with experience group for the more popular types of salmon and bottomfish--coho, chinook, lingcod, red rockfish, pink salmon and greenling.

5. As the level of experience increased, anglers tended to value eating over catching bottomfish and eating bottomfish over salmon.

6. As the level of experience increased, anglers attached greater importance to releasing undersized fish.

7. More experienced anglers tended to value sharing what they have learned with others.

8. Less experienced anglers tended to place more importance on 'experiencing excitement' and the 'catch', emphasizing the actual harvest of any (big) fish rather than other recreational experiences.

Grouping by Skill

Respondents were divided into two skill groups: low, (beginner and intermediate anglers) and high (advanced and expert anglers). More respondents rated themselves as low in ability (60%) than as high in ability (40%).

Personal and fishing characteristics: There were few differences in the personal characteristics of the two skill groups. There were no significant differences between the skill groups in age, marital status, and education. The percentage of women anglers was approximately four times greater in the low skill group ($p<0.01$). Significant differences also occurred for occupation ($p<0.01$) and income variables ($p<0.01$). Occupational differences were primarily related to the higher skill level of those employed in the sportfishing industry.

The relationship between skill group and general fishing characteristics followed a pattern similar to the other commitment groupings. As the level of skill increased, the number of years of experience and the number of days fished in 1983 also increased ($p<0.01$ for both). As would be expected, the frequency of anglers who belonged to a fishing or outdoor club increased with skill level ($p<0.05$). The high skill group tended to fish less with family and more by themselves and with other groups such as guides and charterboats ($p<0.05$). There were no significant differences between the skill groups in the mode of fishing or the driving distance to the fishing location.

Catch habits: The two skill groups were similar in the types of fish most frequently caught (Fig. 17). The high skill group had a distinct rank order for the five top fish. In contrast, the low skill group had similar catch frequencies for ranks 2 to 5, that were approximately 15 percentage points below top ranking salmon. Catch frequency values were consistently lower for the low skill group.

With the exception of dogfish, retention of the catch increased with skill for the five top ranking fish (Fig. 18). The pattern was reversed for ranks 6 to 10, excluding pink salmon. These differences were significant only for coho salmon.

Resource opinions: Anglers from the different types of fishing groups had similar distributions of skill levels. Responses for mixed anglers differed between the two skill groups for five of the twelve resource items (Table 27). Agreement decreased with skill level for the statement 'not catching any fish is less satisfying when bottomfishing than salmon fishing'. Skilled anglers tended to disagree that 'bringing bottomfish home to eat is more important than catching them' ($p<0.05$). Agreement decreased with skill for the two statements concerning the greater degree of skill ($p<0.10$) and patience ($p<0.05$) required for salmon versus bottomfishing.

Bottomfishing characteristics: There were no significant differences in the time spent bottomfishing or the depth range for mixed anglers in the two skill groups. However, the proportion of these anglers who used specialized gear increased significantly with skill ($p<0.01$), from 38% to 50% for the high skill group. There were no significant differences in the types of gear used by these groups.

Angler motivations: Developing skills and abilities and 'experiencing excitement' were the most important catch-related motivations for both angler groups (Table 28). Both 'skills' and 'challenge' were significantly more important to the higher skill group (Fig. 19). Testing and using equipment became more important as skill increased. The remaining differences were not significant.

Both skill groups placed high value on releasing undersized fish (Fig. 20). As with the other high commitment groups, the high skill group attached significantly greater importance to this practice than the other group. Both groups valued escapism, nature and being with others. These items appeared to be most important in both group's overall recreational experiences. The differences between the groups were generally for the catch-related items. Anglers in the high skill group placed more importance on sharing what they have learned with others ($p<0.05$).

Satisfaction: Anglers with different skill levels placed a different importance on their overall fishing experience (Table 29). There was a tendency for highly skilled anglers to be more satisfied with their overall fishing experience in 1983 than those anglers with lower skill ($p<0.01$).

Summary by skill group

1. As the level of skill increased, there was a greater tendency for anglers to be male, have higher incomes, have more experience both in terms of years fished and avidity during 1983, and to be a member of a fishing or outdoor club. Highly skilled anglers fished more often by themselves or with fishing guides or charters.

2. There were no differences between skill groups in the types of fish caught although the catch frequencies had a distinct rank order for the high skill group. Catch frequency values for each fish were also consistently greater for the high skill group.

3. As the level of skill increased, the availability of salmon fishing opportunities tended to have less influence over the desire to bottomfish.

4. Less skilled anglers tended to fish for bottomfish because they perceived them to be easier to catch and require less skill and patience than salmon. They also viewed not catching any fish as less satisfying when bottomfishing than when salmon fishing.

5. Highly skilled anglers appeared to place greater value on developing their skills and abilities, seeking more challenge or sport, and testing and using their equipment. These anglers also placed more importance on sharing what they have learned with others and releasing undersized fish.

6. A larger percentage of anglers in the high skill group had specialized bottomfishing gear, although there were no differences between skill groups in the types of gear used.

7. Highly skilled anglers appeared to be more satisfied with their overall fishing experience in 1983.

Generally, less skilled anglers had greater catch expectations, especially for bottomfish. They were more oriented towards the consumptive aspects of fishing while the high skill group valued the 'pursuit' elements of the overall fishing experience.

Overall summary of commitment

The following statements highlight important differences and similarities among commitment levels.

1. Generally, the types of fish caught and their relative ranks did not vary significantly among commitment levels.

2. Catch frequencies increased as levels of commitment became greater. Species retention also increased significantly for coho. Most types of salmon and the popular bottomfish (i.e. lingcod, red rockfish) tended to be kept at least sometimes by over 90% of the respondents.

3. A large percentage of the highly committed groups used specialized gear for bottomfishing. Many of the more avid anglers used hand lines, depth/fish finder and navigation aids.

4. Most anglers, regardless of their commitment level, often fish for both salmon and bottomfish. However, anglers with different commitment levels attached different opinions and values to each type of fishing resource.

5. Anglers with a lower commitment level appeared to be less satisfied with not catching any fish while bottomfishing than while salmon fishing.

6. A significant portion of highly committed anglers gained more satisfaction from eating bottomfish than from catching them. However, there was a subgroup that had the opposite opinion.

7. Many of the less committed anglers viewed salmon fishing as requiring more patience while they considered bottomfishing as easier and requiring less skill.

8. The less committed anglers placed greater importance on the 'catch' aspects of fishing such as the 'excitement' and 'catching at least one fish'.

9. The highly committed anglers placed more importance on those aspects of the fishing trip that were connected with the pursuit of the catch. They attached more value to the challenge or sport, improvement of their skill and mastery over their equipment. Other important values for individuals within the highly committed segment included sharing what they have learned with others and being with fellow specialists.

10. Most anglers, regardless of their commitment level, gave highest values to the environmental, social or personal motivations for fishing. Catch-related motivations tended to vary among commitment levels.

11. The highly committed anglers were more satisfied with their overall fishing experience in 1983.

Grouping by age

Age differences can often account for differences in leisure behaviour (Outdoor Recreation Resources Review Commission 1962; Brewer and Gillespie 1967; Moeller and Engelken 1972; Check et al. 1976). Frequently physical requirements in outdoor activities such as saltwater fishing influence the level and type of involvement of different age groups. Different age groups may also seek separate recreational experiences because of their position in the family life cycle. Moeller and Engelken (1972) found that younger anglers were principally motivated by catching fish or fish-oriented experiences, while older fishermen sought companionship to a large extent (Bryan 1974).

Respondents were divided into three age categories to represent younger (<30 years of age), middle age (30-49 years of age) and older (>49 years of age) angler groups. These three age groups comprised 27%, 47%, and 26% of the respondents respectively.

Personal and fishing characteristics: While the three age groups had similar proportions of men and women anglers, significant differences occurred with marital status, education, occupation and income level. Understandably, the younger age group had a larger percentage of single anglers than the two other age groups. The older angler group tended to have the highest level of grade school and graduate study education categories. The frequency of university and technical level education tended to decrease with age. Income level increased with age, particularly for the younger and middle age groups. Occupational differences were primarily due to the higher percentage of students, labourers and technicians in the older age group.

The three age groups were not significantly different for fishing characteristics including skill level, driving distance and membership in a fishing or outdoor club. Not surprisingly, the number of years' fishing experience was higher among the older age groups ($p<0.01$). The older age groups also had a higher avidity ($p<0.05$).

The three age groups appeared to use different modes of fishing to different degrees ($p<0.01$), although private boat was always the principal mode. The younger age group tended to fish more from the shore while the middle age group had the highest frequency of charterboat use. The use of private boats also increased as age level increased. There were significant differences in the type of social group with which the three angler groups fish ($p<0.01$). A large percentage of the younger and older age groups fished mostly with family while anglers in the middle age group fished a similar amount with friends and family social groups. There was also a higher percentage of anglers fishing by themselves within the middle and older groups.

Catch habits: There were nine fish types in common among the three groups with herring, greenling, and true cod each occurring once (Fig. 21). There were no apparent differences in the fish groups caught by the three age groups as indicated by a similar shape to the catch profiles. There were differences among the three groups in the rank orders of the fish caught; catch frequency of coho and chinook generally increased and other rockfish decreased with age.

The percent never kept values decreased as age increased for coho, lingcod, red rockfish, other rockfish, and greenling (Fig. 22). The never kept values decreased between the youngest and oldest age groups for the remaining fish groups. Values within the intermediate age group were not consistent.

Resource opinions: Anglers from the different types of fishing groups had similar age distributions. The three age groups of mixed anglers differed in response to four of the opinion statements (Table 30). Agreement with statements concerning switching to bottomfishing when salmon fishing is poor and 'salmon are more exciting to catch' appeared to increase with age level ($p<0.05$, $p<0.01$, respectively). Agreement with the statement 'bringing bottomfish home to eat is more important than catching them' also appeared to increase with age level, but not significantly ($p<0.10$). Agreement tended to increase with age level for the statement that bottomfishing requires less skill ($p<0.01$).

Bottomfishing characteristics: Young anglers in the mixed angler group spent significantly more time bottomfishing ($p<0.01$) (Table 31). There were no significant differences among age groups for the depths of fishing or the proportion of anglers who use specialized bottomfishing gear. The three age groups were significantly different in the types of bottomfishing gear used

($p<0.05$, Table 32). Light tackle was used more often by older age groups while heavier tackle was used more often by younger anglers. The older age group had the highest use of hand lines and the lowest use of location devices such as navigational aids and depth/fish finders.

Angler motivations: The catch-related motivations for fishing varied among the three age groups. Experiencing excitement was significantly more important to younger fishermen (Fig. 23; Table 33). Also important were 'developing skills and abilities', 'experiencing challenge' and 'the catch'. To the younger group, the first four items listed in Table 33 defined the catch experience while factors other than just the catch-related motives appeared to be important to the catch experience of the older groups. 'Doing something with the family' was significantly more important to the older two age groups than any of the catch-related items (Fig. 24). The oldest age group also tended to rank 'sharing' and 'tension reduction' higher than the middle age group who tended to rank 'excitement' and 'experiencing new and different things' as more important (see Fig. 24).

It appeared that as anglers became older, they placed more value on the 'ease of access (roads, launch ramps etc.) to the fishing site' (Fig. 24). A larger percentage of the older angler group rated this item more important than either obtaining 'fish for eating' or 'catching one or two big fish'. All age groups appeared to place similar value on the nature, escapism and 'being with others' recreational experiences. There was a slight tendency for the two older age groups to value these more than the younger angler group.

Significant differences among these groups began to appear for the catch-related items. Generally, the younger angler group placed a greater value on 'excitement' and 'catch' while the older group valued companionship elements. These findings generally agree with earlier studies (Moeller and Engelken 1972; Bryan 1974). Access to the fishing site was also important for a satisfactory recreational experience for older anglers.

Level of satisfaction: All three age groups attached similar levels of satisfaction to their overall fishing experience in 1983 and no significant differences occurred. Most anglers were moderately satisfied, with the next largest percentage being very satisfied with their overall experience.

Summary of age segmentation

1. The three age groups were distinct in marital status, education, occupation and income level.

2. As age increased, fishing experience and number of days fishing also tended to increase. The three age groups had distinct fishing modes and social groups.

3. The catch characteristics were similar for all age groups. Catch frequency increased with angler age for coho and chinook salmon and decreased with age for other rockfish.

4. The retention characteristics were similar for all age groups although the percent of anglers who caught and never kept fish appeared to decline with increasing age.

5. The tendency to switch to bottomfishing when salmon fishing is poor appeared to increase with age.

6. As age increased, a higher percentage of anglers tended to feel that salmon are more exciting to catch.

7. There was higher agreement by the older age group to the statement that the food value of bottomfish was more important than their catch value.

8. The older age groups agreed more strongly that bottomfishing requires less skill. Mixed anglers within these groups however, did not spend as much time bottomfishing as did the younger age group.

9. The frequency of gear specialization did not vary by age group although there were differences in the type of gear used.

10. As age increased the relative importance of catch-related experiences appeared to decline.

11. Older anglers tended to have a broader catch experience than younger anglers as they valued companionship and tension release to a large degree. They also tended to place more importance on access to the fishing site than any other group examined.

DISCUSSION

This survey examined the views of saltwater anglers attending the 1984 Boat and Sportsman's Show at Vancouver's B.C. Place stadium. A number of items were specifically included in the questionnaire to check for sample bias. Analysis of the socioeconomic results indicated that a wide spectrum of the public were represented. Other studies of the B.C. angler population control more rigorously for bias (Anon 1977; MacGregor 1982; Bijsterveld 1983).

In this survey there was a higher proportion of males and respondents with an above average number of fishing days in 1983. This survey also included anglers whose average fishing activities were greater during the fall and winter and less during the spring and summer than reported from other studies. The respondents were primarily residents of areas fringing the

Strait of Georgia (93%) and to a large extent, Greater Vancouver (70%). This distribution was disproportionate to estimates predicted for the overall licensed angler population in the Tidal Diary Program and included few anglers from out of province locations. While it may seem that a sample drawn from a boat show would over-represent anglers who fish from private boats, the frequency observed was lower than that estimated by the Tidal Diary Program.

Despite the biases, the results of this survey provided insight into the importance of bottomfishing for the overall saltwater recreational fishery. It was not surprising that there were few anglers who considered their fishing activities to be exclusively confined to bottomfishing. It was perhaps surprising that the number of anglers who divided their fishing time between bottomfish and salmon was approximately equal to those anglers who fished for salmon only.

The personal and fishing characteristics of mixed and salmon anglers were similar in many respects, including their commitment to saltwater fishing. However, the mixed angler group had a higher percentage of females, more family-oriented fishing outings and a greater tendency to fish entirely by private boat. The mean age of the mixed angler group was also lower than the salmon angler group. These differences may have influenced the preferences of each group.

Within the mixed angler group, the time spent bottomfishing was usually a small proportion of the total fishing time. Most anglers (58%) spent less than one-quarter of their total fishing time at this activity and few (12.3%) spent greater than half of their fishing time. This pattern was apparently not related to commitment, although there were differences among the three age groups. Respondents in the youngest age group (i.e. <30 years) spent more of their time specifically bottomfishing. Overall, 60% of the mixed angler group indicated that they often alternate between salmon fishing and bottomfishing on a typical fishing day. The angler day unit of fishing effort must considerably underestimate bottomfishing effort.

A large percentage of the reported bottomfishing occurred within a 125 foot vertical range, starting at depths below 25 feet. Fishing in shallower depths may not be common because of the scarcity of preferred bottomfish including lingcod (Moulton 1977) and the presence of kelps and other large algae that interfere with fishing tackle. Maximum fishing depth was probably influenced by gear limitations. Water current and wind must be very light to successfully fish these depths using light tackle. However, specialized gear including heavy tackle may be used to fish depths to 400 feet during favourable weather conditions (Wilson and Vander Werff 1977).

It is important to compare the general perceptions and opinions of bottomfish and salmon resources held by the mixed angler group. It was not surprising that most of these anglers regarded catching a salmon as more exciting than catching bottomfish. The reward of an exciting catch may in part explain why anglers spend long periods of time fishing for salmon. Results from this survey suggest that bottomfishing is an important activity when salmon fishing is poor. In contrast to salmon fishing, mixed anglers spend a small amount of time directed at bottomfish. The overall level of satisfaction may be comparable to salmon fishing, although the relative importance of items such as fishing technique, catch and food aspects may vary.

Regardless of salmon fishing technique, bottomfishing usually requires a higher level of conscious involvement. Jigging, for example, requires regular vertical motion of the lure at a depth very near the bottom. As productive bottomfishing areas usually have irregular terrain and some type of water motion (waves or tide), constant attention is required. In contrast, salmon fishing varies considerably in the level of involvement required. Trolling, for example, requires very little active involvement. Other methods such as jigging and mooching compare with the level of attention required for bottomfishing, although these methods are not appropriate in many areas. Mixed anglers may switch between the two types of fishing in order to increase or decrease their level of fishing activity, independent of the type of fish caught.

Another difference between salmon and bottomfishing is the location. While bottomfishing, it is important to fish very close to the bottom as these fish do not usually stray beyond visible distance into open water (McElderry 1979; Moulton 1977). Good bottomfishing locations are characterized by high bottom relief, depth, tide currents and exposure, and the presence of feed. In contrast, salmon fishing takes place in open water and good fishing locations often depend upon the thermal structure of the water column, water currents, bathymetric features and the presence of feed. As a result, each type of fishing requires a different set of assessment criteria for determining suitable fishing areas. While opinions varied, agreement was stronger by mixed anglers that good bottomfishing areas are easier to identify than good salmon fishing areas. Response to this statement was not influenced by any of the five grouping variables.

Another major difference between the types of fishing is the tackle and gear requirements. An angler can bottomfish using almost any type of gear including most salmon tackle although weight and size may be important. In contrast, a wide variety of salmon tackle with distinctive weight, size, color, and water motion properties is available. Often, matching the appropriate type of tackle with the fishing conditions is fundamental for catching a salmon.

The level of skill required for a particular type of fishing is often assessed by the level of success (i.e. number of fish caught) and ultimately rests upon knowledge of how to use fishing equipment most effectively, and perhaps, luck. Many mixed anglers probably consider bottomfishing to require less skill since a considerably higher catch rate may be attained with less fishing knowledge. Agreement with this statement was weaker among anglers who spend more time bottomfishing (youngest age group) or fish more in general (high avidity and skill groups). This pattern suggested that those anglers more familiar with bottomfishing technique recognize certain skill and knowledge requirements intrinsic to this form of fishing.

A variety of specialized gear types is available to increase catch efficiency for bottomfish. Common types of commercial gear appropriate to recreational bottomfishing include the use of live fish or prepared bait (e.g. 'cod skins'), specialized configurations of terminal tackle, heavy line and tackle to access deep areas and fish locating equipment. Enthusiasts of recreational bottomfishing recommend the use of certain types of lures such as leadhead jigs and plastic worms (Wilson and Vander Werff 1977). These authors also recommend using light tackle to make catching bottomfish more sporting

("you don't hunt rabbits with an elephant gun"). Approximately 40% of the mixed angler group use some form of specialized gear for bottomfishing. As would be expected, the tendency to use specialized gear increased with the level of skill and avidity. The types of specialized gear used were primarily bait or lures with light tackle, heavy tackle, hand lines and depth/fish finders.

Mixed anglers may turn to bottomfishing when salmon fishing is poor due to an expectation of a higher catch rate. Approximately 40% of the mixed anglers surveyed felt that bottomfishing was more productive than salmon fishing and opinion was equally divided on the statement that not catching any fish was less satisfying when bottomfishing than salmon fishing. There was a mixed response to the statement that the type of fish caught didn't really matter. As commitment increased, there appeared to be less importance attached to the specific types of fish caught and the dependency of satisfaction on the expectation of catching a fish decreased. Hence, a switch to bottomfishing did not necessarily imply a greater catch expectation, although this view is common among many anglers, particularly the less avid and less skilled.

As salmon and different types of bottomfish differ considerably in their flavour, texture and appearance (Anon. 1982) fishing efforts by mixed anglers may be directed by food preferences. Response was divided to the statement that the food value was more important than the catch value of bottomfish. As the level of skill, fishing experience and age increased there tended to be more importance attached to the food value of bottomfish. Slightly more mixed anglers preferred to eat salmon over bottomfish although this preference decreased with experience. To complete this topic a statement comparing the catch with the food value of salmon should have been included. The present results indicate that the food value of bottomfish is important to many anglers, particularly the more experienced.

The types of fish caught by salmon and mixed anglers were very similar. Regardless of the target species, an angler who spends enough time fishing will probably catch the major types of bottomfish. This is because areas for the two types of fishing may vary by a short vertical distance in the water column. Bottomfish were caught and kept by a higher percentage of mixed than salmon anglers. The 'incidental' catch by the latter group was surprisingly high; nearly half (47%) indicated that they had caught lingcod while 38% and 23% had caught red rockfish and other rockfish respectively. While most mixed anglers spend less than one-quarter of their time bottomfishing, catch frequencies of lingcod and red rockfish differed from coho salmon by less than 15 percentage points (Fig. 5).

Generally, as the level of commitment increased, the percentage of anglers who were successful at catching a fish also increased. The amount of change varied by fish type. The difference in catch frequencies between commitment groups was disproportionately large for lingcod, dogfish and chinook salmon when compared with the other types of fish. These differences did not result from the proportion of time spent bottomfishing but may be due to the types of gear used or the fishing season.

Respondents regarded the elements of the natural environment, escapism and being with others as more important to their overall satisfaction in a fishing trip than either the size or number of fish caught. These motivation values were given consistently high ratings regardless of the group examined. The importance ranking of the catch-related aspects and other motivations for saltwater fishing resulted in more variability among different groups of anglers. Salmon anglers were more interested in the excitement, challenge and mastery of their use of equipment than in catching at least one (big) fish. These anglers placed relatively more importance on 'getting away' than on obtaining fish for eating and were more selective in the type of fish they attempted to catch. Both the mixed and bottomfish anglers placed greater emphasis on obtaining at least one fish for eating regardless of its 'size' or type. The bottomfish anglers attached more importance to the sharing and novelty aspects of the catch experience than the other two types of anglers. Generally, anglers in the bottomfish and salmon groups were more satisfied with their overall fishing experience in 1983 than anglers in the mixed group. As for most salmon anglers, the more highly committed anglers attached greater importance (for catch-related aspects) to motivations that were connected with the pursuit of the catch. The less committed anglers attached greater value to the actual catch or harvest aspects of the fishing outing. Generally, these motivations were apparent for all three measures of commitment-avidity, experience and skill. The level of satisfaction tended to increase as commitment to fishing increased.

Experiencing excitement, challenge, and developing skills tended to be more important to the younger angler's catch experience than for older anglers. Most older anglers tended to value a more diversified catch experience that consisted of elements other than the consumptive aspects of the catch. These elements included sharing what they have learned with others, tension reduction, and access to fishing sites.

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Table 1. Frequency distribution of location of residence of the survey respondents (n=920).

Location	Percent
Greater Vancouver	70.4
Squamish	0.8
Sechelt	2.2
Powell River	1.6
Campbell River	1.2
Courtenay - Comox	1.1
Parksville	1.4
Nanaimo	3.7
Ladysmith	0.2
Duncan	2.2
Greater Victoria	7.5
W. Vancouver Island	1.3
N. Vancouver Island	1.8
Interior B.C.	1.3
Northern B.C.	1.6
Alberta	0.2
Other, Canada	0.4
Washington	0.7
Other	0.3

Table 2. The frequency distribution of ages of saltwater recreational anglers from this study, the 1982 Tidal Diary Program (Bijsterveld unpub. data) and the 1982 B.C. census (Ministry of Industry and Small Business Development 1983).

Age category	This study %	1982 Tidal Diary %	1982 B.C. census
15-24	13.6	13.4	28.6
25-34	24.0	25.1	17.8
35-44	25.8	22.8	13.0
45-54	19.2	16.9	10.1
55-64	12.1	13.7	9.4
>64	5.4	8.1	11.1
Sample size	868	10068	

Table 3. The frequency distribution of household income levels of respondents (n=795).

Household income (000's)	Percent
<15	10.1
15-29.9	24.9
30-44.9	35.1
45-59.9	15.6
60-74.9	6.8
>75	7.5

Table 4. Frequency distribution of education levels of respondents (n=874).

Education	Percent
Grade School	5.1
High School	40.2
Technical or Vocational School	26.2
University	21.7
Graduate Study	6.8

Table 5. Frequency distribution of occupational levels of respondents (n=823).

Occupation	Percent
Labourer	10.3
Technician, service, etc.	27.0
Mid level management	21.9
High level management	18.2
Professional	3.5
Housewife	3.9
Retired	7.9
Student	4.3
Unemployed	1.0
Fishing industry/charter boat	2.1

Table 6. Percent of 1983 fishing time spent using each of the modes (N=902).

Percent of time	Fishing mode							
	Private boat		Charter boat		Dock or pier		Shore	
	N	%	N	%	N	%	N	%
1-25	34	3.8	54	6.0	52	5.8	91	10.1
26-50	48	5.3	20	2.2	13	1.4	31	3.4
51-75	99	11.0	7	0.8	11	1.2	18	2.0
76-100	684	75.8	19	2.1	3	0.3	10	1.1

Table 7. Frequency distribution of social groups with which respondents fish most often (n=836).

Group type	Percent
Family	38.5
Friends	50.6
Alone	8.0
Fishing club	0.4
Fishing charter	1.2
Fishing guide	0.7
Business associates	0.6

Table 8. The frequency distribution of one-way driving distance from the place of residence of the respondents to where they fish most often (n=905).

Driving distance (miles)	Percent
Zero	3.5
0-9	33.4
10-19	19.8
20-29	13.0
30-39	6.1
40-49	4.9
50-59	5.3
60-69	2.8
70-79	1.4
80-89	1.7
90-99	0.7
>99	7.5

Table 9. The frequency of skill level of the respondents obtained by a self-rating of fishing ability (n=918).

Skill level	Percent
Beginner	11.0
Intermediate	48.5
Advanced	33.4
Expert	7.1

Table 10. The frequency distribution of the years of fishing experience of respondents (n=919).

Years of experience	Percent
<5	10.7
5- 9	13.2
10-14	15.8
15-19	12.3
20-24	15.7
25-29	8.1
30-34	10.8
35-39	3.6
40-44	4.4
>44	5.7

Table 11. The frequency distribution of the number of days fished during 1983 by survey respondents (n=909).

Number of days	Percent
1- 9	20.8
10-19	23.1
20-29	15.5
30-39	9.8
40-49	9.0
50-59	6.4
60-69	4.7
70-79	2.1
80-89	2.6
90-99	1.4
>99	4.5

Table 12. The catch and retention frequencies of fish groups taken by respondents (n=932). Catch frequencies represent the percentage of respondents who caught that species or species group at least once.

Fish group	Code	Fish caught (%)	Retention habits	
			Never kept (%)	Kept at least sometimes (%)
Coho salmon	CO	75.2	1.7	98.3
Chinook salmon	CH	59.7	1.8	98.2
Lingcod	LC	57.9	6.1	93.9
Dogfish	DF	55.9	87.2	12.8
Red rockfish	RR	50.7	9.3	90.7
Other rockfish	OR	33.9	14.2	85.8
Pink salmon	PS	27.1	5.1	94.9
Flatfish	FF	18.5	27.3	72.7
Greenling	GL	16.0	27.5	72.5
Other salmon	OS	13.9	6.2	93.8
Herring	HR	13.0	38.0	62.0
True cod	TC	12.1	24.0	76.0
Halibut	HC	8.6	8.8	91.2
Sculpin	SC	6.3	64.4	35.6
Surf perch	SP	4.5	40.5	59.5
Other		2.3	47.6	52.4

Table 13. The frequency distribution of 1983 angling time spent bottomfishing by bottomfish and mixed anglers (n=405).

Time spent bottomfishing (%)	Percent
1- 25	58.3
26- 50	27.4
51- 75	10.6
76-100	1.7

Table 14. The frequency distribution of bottomfishing depths for bottomfish and mixed anglers (n=435).

Depth interval (feet)	Percent
<25	3.2
26- 75	45.0
76-150	43.0
>150	8.8

Table 15. The types of specialized gear used specifically for bottomfishing. Percentage values shown indicate the frequency of gear type use by anglers who specialize (specialized) and the mixed angler group (all) (N=191, but multiple responses were given in many cases).

Gear type	Number	Percent	
		Specialized	All
Light tackle	68	35.6	15.8
Heavy tackle	55	28.8	12.8
Hand line	44	23.0	10.2
Down rigger	32	16.8	7.5
Bait or lure	124	64.9	28.8
Depth/fish finder	37	19.4	8.6
Navigational aids	16	8.4	3.7
Other	6	3.1	1.4

Table 16. Response to the resource opinion statements by the mixed angler group.

Statement		Key word	Response % D	N	A	Sample size
A 1.	On a typical fishing day I often alternate between salmon and bottomfishing.	Alternate	16.4	24.5	59.1	372
2.	When salmon fishing is poor I switch to bottomfishing.	Poor	11.8	15.1	73.1	405
3.	I would not fish for bottomfish if salmon were easier to catch.	Easier	53.7	15.4	30.9	382
B 1.	Salmon are more exciting to catch.	Exciting	6.0	7.2	86.8	401
2.	Not catching any fish is less satisfying when bottomfishing than salmon fishing.	Satisfy	30.9	35.5	33.6	375
3.	Bringing bottomfish home to eat is more important than catching them	Eat-catch	34.3	30.4	35.3	388
4.	I like eating bottomfish more than salmon.	Eat BF	33.6	37.8	28.6	381
C 1.	In the areas that I fish, bottomfishing is more productive than salmon fishing.	Productive	25.9	31.3	42.8	383
2.	Good bottomfishing areas are easier to identify than good salmon fishing areas.	Identify	27.1	29.7	43.2	387
3.	Bottomfishing requires less skill.	Skill	21.7	15.3	63.0	392
4.	Salmon fishing requires more patience.	Patience	13.8	16.9	69.2	384
5.	The type of fish I catch doesn't matter.	Type	33.1	24.8	38.1	391

Table 17. The experience items, key words that represent these items and the mean level of importance (on a scale of 1 to 5) to the respondents.

Statement	Key words	Importance Mean	N
1. Releasing the undersized fish	Released fish	4.29	763
2. Being away from crowds of people	Crowds	4.02	771
3. Viewing the natural or scenic beauty	Scenery	4.01	768
4. Getting away from the usual demands of life	Get away	3.96	768
5. Being with others who enjoy similar things	Others	3.90	763
6. Experiencing tranquility	Tranquility	3.88	745
7. Developing skills and abilities	Skills	3.62	723
8. Experiencing excitement	Excitement	3.56	736
9. Doing something with the family	Family	3.52	750
10. For the challenge or sport	Challenge	3.34	749
11. Experiencing new and different things	New	3.33	749
12. Releasing or reducing some built up tensions	Tensions	3.32	730
13. Sharing what you have learned with others	Sharing	3.26	764
14. For the experience of the catch	Catch	3.17	740
15. Testing and using your equipment	Test equipment	2.92	738
16. Catching at least one fish	Least one fish	2.90	749
17. To obtain fish for eating	Eat fish	2.76	740
18. Catching one or two big fish rather than many small fish	Big fish	2.75	754
19. Ease of access (roads, launch ramps, etc.) to fishing site	Access	2.74	737
20. Accessibility to tackle shops, marinas, and restaurants	Services	2.04	733

Table 18. The frequency distribution of the overall satisfaction levels with fishing in 1983 expressed by survey respondents (n=854).

Satisfaction	Percent
Not satisfied	8.7
Slightly satisfied	14.3
Moderately satisfied	44.6
Very satisfied	25.3
Extremely satisfied	7.1

Table 19. Mean importance of catch-related motivation items by the type of angler group. Chi-square analyses were performed on five agreement categories across angler groups.

Type of angler					
Salmon		Mixed		Bottomfish	
Item	Mean	Item	Mean	Item	Mean
Excitement	3.70	Skill	3.58	Catch**	3.76
Skill	3.65	Excitement	3.44	Excitement	3.67
Challenge	3.48	Challenge	3.23	Skill	3.63
Catch**	3.25	Catch**	3.07	Challenge	3.09
Test Equipment	3.02	Eat fish**	2.91	Eat fish**	2.95
Big fish*8	2.97	Least one fish	2.84	Least one fish	2.91
Least one fish	2.96	Test equipment	2.83	Test equipment	2.86
Eat fish**	2.61	Big fish**	2.55	Big fish**	2.77

*P<0.05
**P<0.01

Table 20. The frequency distribution of overall satisfaction levels with fishing in 1983 by the three angler groups (p<0.01).

Satisfaction level	Type of angler		
	Salmon	Mixed	Bottom
Not	9.3	7.8	3.6
Slightly	9.8	18.5	3.6
Moderately	44.8	44.1	67.8
Very	30.2	21.6	10.7
Extremely	5.9	8.0	14.3
Sample size	388	422	28

Table 21. Responses to resource opinion statements by the three avidity groups. Chi-square analyses were performed on five response categories.

Statement	Opinion (%)									
	Disagree			Neutral			Agree			
	<20	20-39	>39	<20	20-39	>39	<20	20-39	>39	Significance
I would not fish for bottomfish if salmon were easier to catch	47	55	60	19	14	13	34	31	27	$p<.05$
Not catching any fish is less satisfying when salmon fishing than bottomfishing	27	23	41	35	47	24	28	30	35	$p<.01$
Bottomfishing requires less skill	19	25	24	14	19	15	67	56	61	$p<.05$

Table 22. Frequency distribution of anglers in the three avidity groups who use different types of specialized gear.

Gear Type	Avidity group <20 days	20-39 days	>39 days
Light tackle	36.7	31.3	37.7
Heavy tackle	21.7	37.5	24.7
Hand line	15.0	12.5	33.8
Down rigger	16.7	15.6	18.2
Bait or lure	71.7	65.6	59.7
Depth/fish finder	11.7	15.6	28.6
Navigational aids	1.7	3.1	16.9
Other	1.7	0	5.2
Sample size	60	32	77

Table 23. Mean importance of catch-related motivation items by avidity group. Chi-square analyses were performed on five agreement categories.

<20 days Item	Mean	Avidity group 20-39 days Item	Mean	>39 days Item	Mean
Excitement	3.51	Excitement	3.59	Skill**	3.85
Skill**	3.47	Skill**	3.49	Excitement	3.56
Challenge*	3.20	Challenge*	3.31	Challenge*	3.54
Catch	3.20	Catch	3.06	Test equipment**	3.19
Least one fish	2.93	Least one fish	2.91	Catch	3.06
Eat fish	2.76	Test equipment**	2.84	Least one fish	2.88
Test equipment**	2.74	Eat fish	2.71	Eat fish	2.81
Big fish	2.76	Big fish	2.71	Big fish	2.80

*$p<0.05$
**$p<0.01$

Table 24. The frequency distribution of overall satisfaction levels with fishing in 1983 by the three avidity groups ($p<0.01$).

Satisfaction Level	Avidity group <20 days	20-39 days	>39 days
Not	11.8	7.6	4.5
Slightly	17.3	12.9	10.1
Moderately	45.6	47.4	43.3
Very	20.0	27.3	30.6
Extremely	5.3	4.8	11.6
Total	340	209	268

Table 25. Responses to the resource opinion statements by the three experience levels. Chi-square analyses were performed on 5 agreement categories.

	Opinion (%)									
	Disagree			Neutral			Agree			
Statement	<10	10-29	>29	<10	10-29	>29	<10	10-29	>29	Significance
Bringing bottomfish home to eat is more important than catching them	42	35	28	36	29	27	22	36	45	$p<0.05$
I like eating bottom-fish more than salmon	38	33	26	38	36	36	23	31	37	$p<0.01$
Salmon fishing requires more patience	6	18	13	24	13	20	70	69	67	$p<0.10$
The type of fish I catch doesn't matter	26	41	42	28	25	21	46	34	37	$p<0.10$

Table 26. Mean importance of catch-related motivation items by experience groups. Chi-square analyses were performed on five agreement categories.

Experience group					
<10 years		10-29 years		>29 years	
Item	Mean	Item	Mean	Item	Mean
Excitement	3.97	Skill	3.62	Skill	3.49
Skill	3.70	Excitement*	3.60	Challenge	3.36
Catch*	3.41	Challenge	3.34	Excitement*	3.29
Challenge	3.33	Catch*	3.10	Catch*	3.07
Least one fish**	3.08	Test equipment	2.91	Test equipment	3.05
Big fish	2.89	Least one fish**	2.88	Eat fish	2.80
Test equipment	2.82	Eat fish	2.79	Least one fish**	2.78
Eat fish	2.72	Big fish	2.74	Big fish	2.64

*$p<0.05$
**$p<0.01$

Table 27. Responses to resource opinion statements by the two skill groups. Chi-square analyses were performed on the five agreement categories.

Statement	Opinion (%)						
	Disagree		Neutral		Agree		
	Low	High	Low	High	Low	High	Significance
I would not fish for bottomfish if salmon were easier to catch	48	62	18	11	34	27	$p<0.10$
Not catching any fish is less satisfying when salmon fishing than bottomfishing	27	37	37	31	36	31	$p<0.05$
Bringing bottomfish home to eat is more important than catching them	32	40	34	23	33	38	$p<0.05$
Bottomfishing requires less skill	18	28	16	15	66	58	$p<0.10$
Salmon fishing requires more patience	11	20	19	15	70	65	$p<0.05$

Table 28. Mean importance of catch-related motivation items by skill groups. Chi-square analyses were performed on five agreement categories.

Low skill		High skill	
Item	Mean	Item	Mean
Skills**	3.51	Skills**	3.76
Excitement	3.49	Excitement	3.64
Catch	3.17	Challenge**	3.62
Challenge**	3.12	Catch	3.17
Least one fish	2.92	Test equipment**	3.15
Eat fish	2.76	Big fish	2.88
Test equipment**	2.76	Least one fish	2.86
Big fish	2.64	Eat fish	2.78

**$p<0.01$

Table 29. The frequency distribution of overall satisfaction levels with fishing in 1983 by skill group ($p<0.01$).

Satisfaction level	Skill group	
	Low	High
Not satisfied	10.0	6.5
Slightly	18.7	7.9
Moderately	45.5	43.9
Very	21.1	31.2
Extremely	4.7	10.5
Sample size	488	353

Table 30. Responses to the resource opinion statements by the three age groups. Chi-square analyses were performed on five agreement categories.

	Opinion (%)									
	Disagree			Neutral			Agree			
Statement	<30	30-49	>49	<30	30-49	>49	<30	30-49	>49	Significance
When salmon fishing is poor I switch to bottomfishing	12	17	10	20	12	15	68	71	75	$p<0.05$
Salmon are more exciting to catch	11	7	4	10	8	1	79	85	95	$p<0.01$
Bringing bottomfish home to eat is more important than catching them	35	37	29	39	25	24	26	38	47	$p<0.10$
Bottomfishing requires less skill	27	24	13	17	14	16	56	62	71	$p<0.01$

Table 31. The frequency of distribution of time spent bottomfishing by mixed anglers in the three age groups.

Time (%)	Age group <30 years	30-49 years	>49 years
1- 25	48.5	62.5	63.8
26- 50	37.3	24.0	28.8
51- 75	11.9	13.0	2.5
76-100	2.2	0.5	3.8
Sample size	134	192	80

Table 32. The frequency distribution of specialized gear types used for bottomfishing by the three age groups. Multiple responses were given in some categories.

Gear type	Age group <30 years	30-49 years	>49 years
Light tackle	28.3	46.8	35.7
Heavy tackle	38.3	26.8	7.1
Hand line	23.3	19.7	33.3
Down rigger	18.3	22.5	9.5
Bait or lure	70.0	62.0	64.3
Depth/fish finder	23.3	25.4	4.8
Navigational aids	13.3	5.6	7.1
Other	1.7	4.2	4.8
Sample size	60	71	42

Table 33. Mean importance of catch-related motivation items by age group. Chi-square analyses were performed on five agreement categories.

Age group					
<30 years		30-49 years		>49 years	
Item	Mean	Item	Mean	Item	Mean
Excitement**	3.86	Skills	3.59	Skills	3.58
Skills	3.73	Excitement**	3.49	Excitement**	3.35
Challenge	3.49	Challenge	3.31	Challenge	3.26
Catch*	3.43	Catch*	3.08	Catch*	3.06
Least one fish	3.01	Test equipment	2.90	Test equipment	2.98
Test equipment	2.95	Least one fish	2.87	Least one fish	2.85
Eat fish	2.82	Big fish	2.75	Eat fish	2.78
Eat fish	2.77	Eat fish	2.72	Big fish	2.73

*p<0.05
**p<0.01

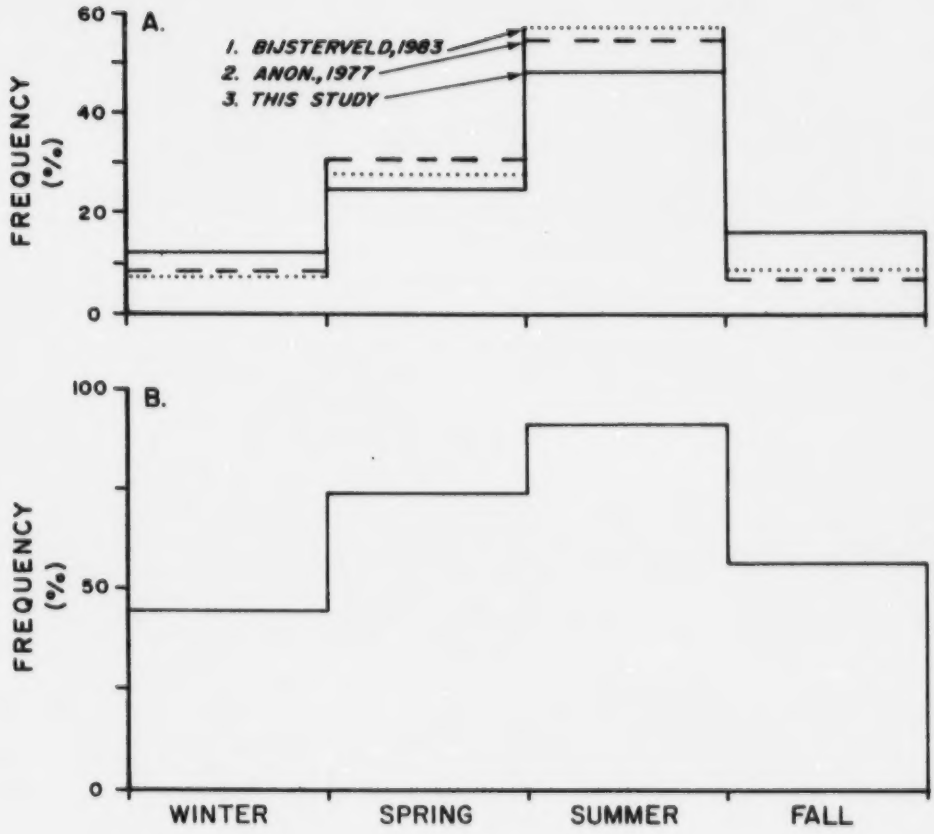


Fig. 1. The seasonal distribution of saltwater angling by (A) the percent of annual fishing days and (B) the percent of anglers who fished.

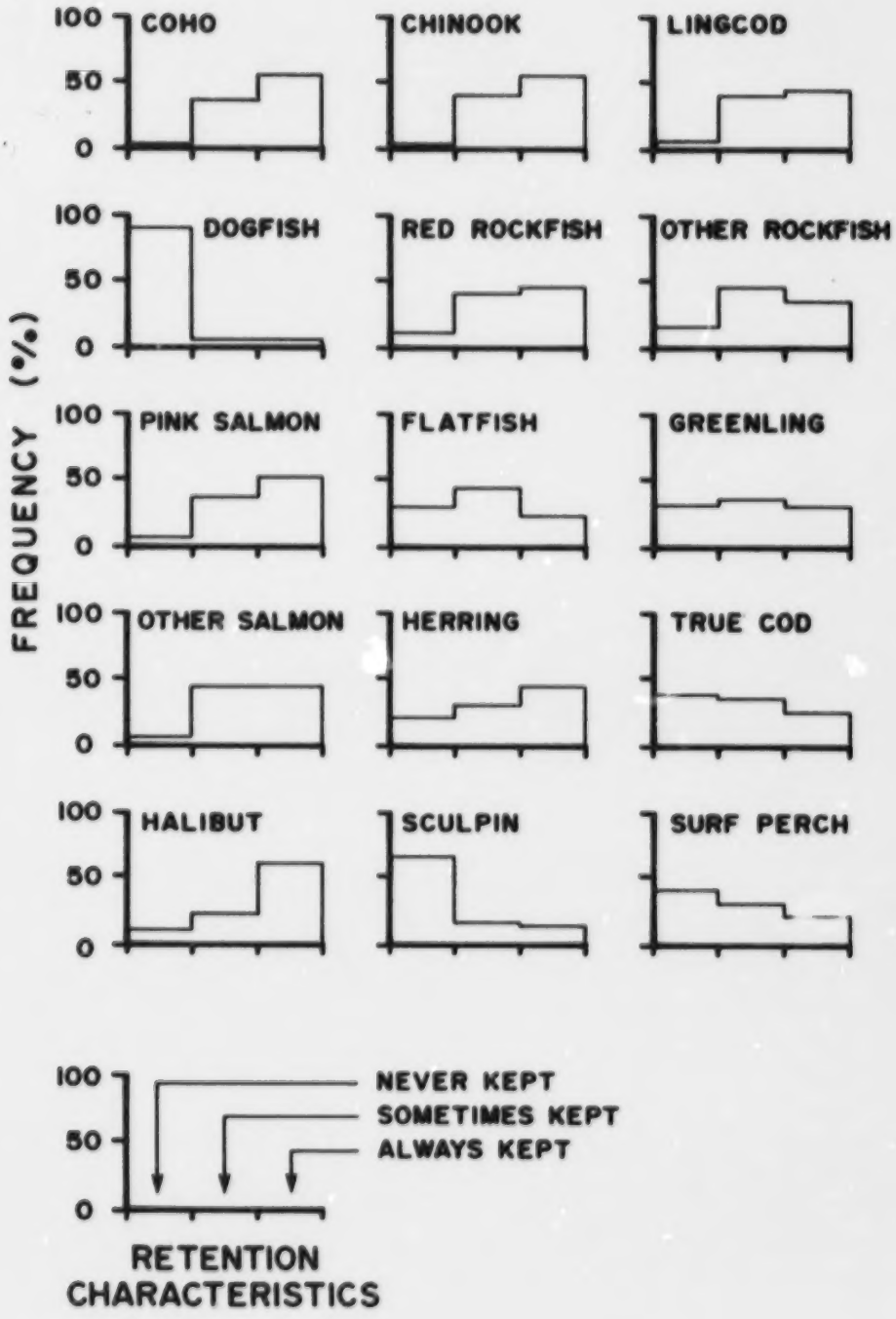


Fig. 2. Retention characteristics for fish caught by respondents (n=932).

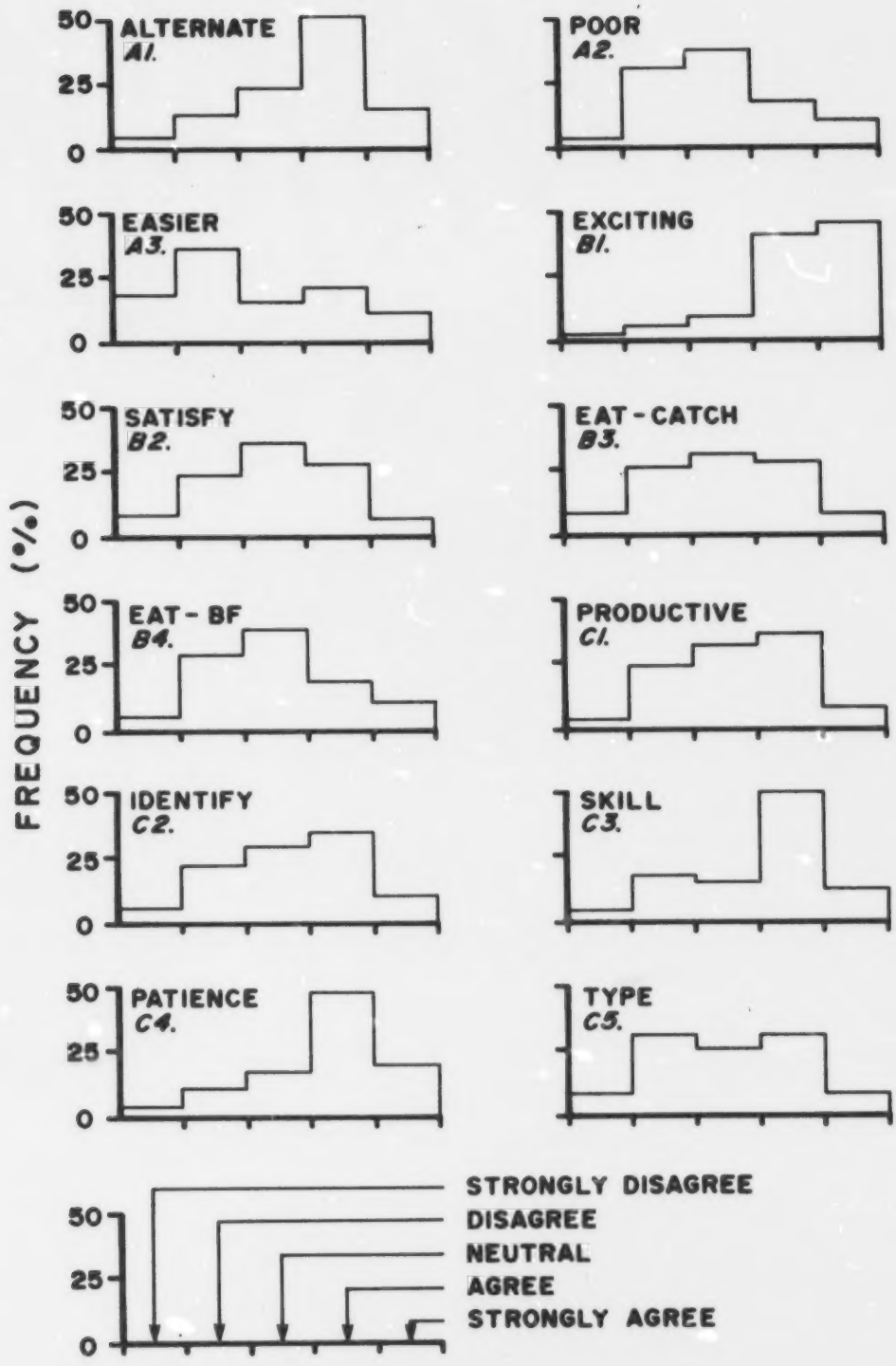


Fig. 3. Responses to resource opinion statements by mixed anglers (n=450). Refer to Table 16 for code descriptions.

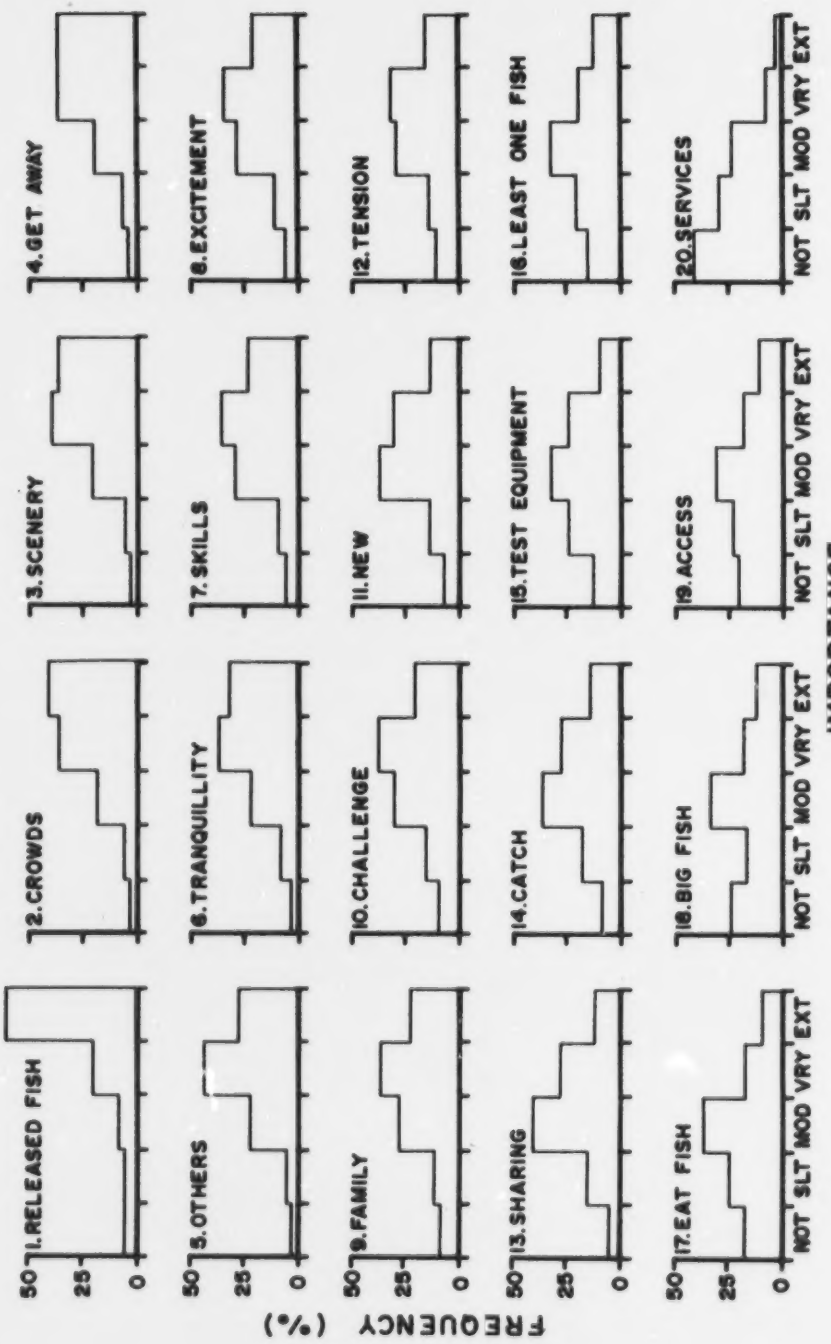


Fig. 4. Responses to recreational experience statements (n=932). Refer to Table 17 for code descriptions.

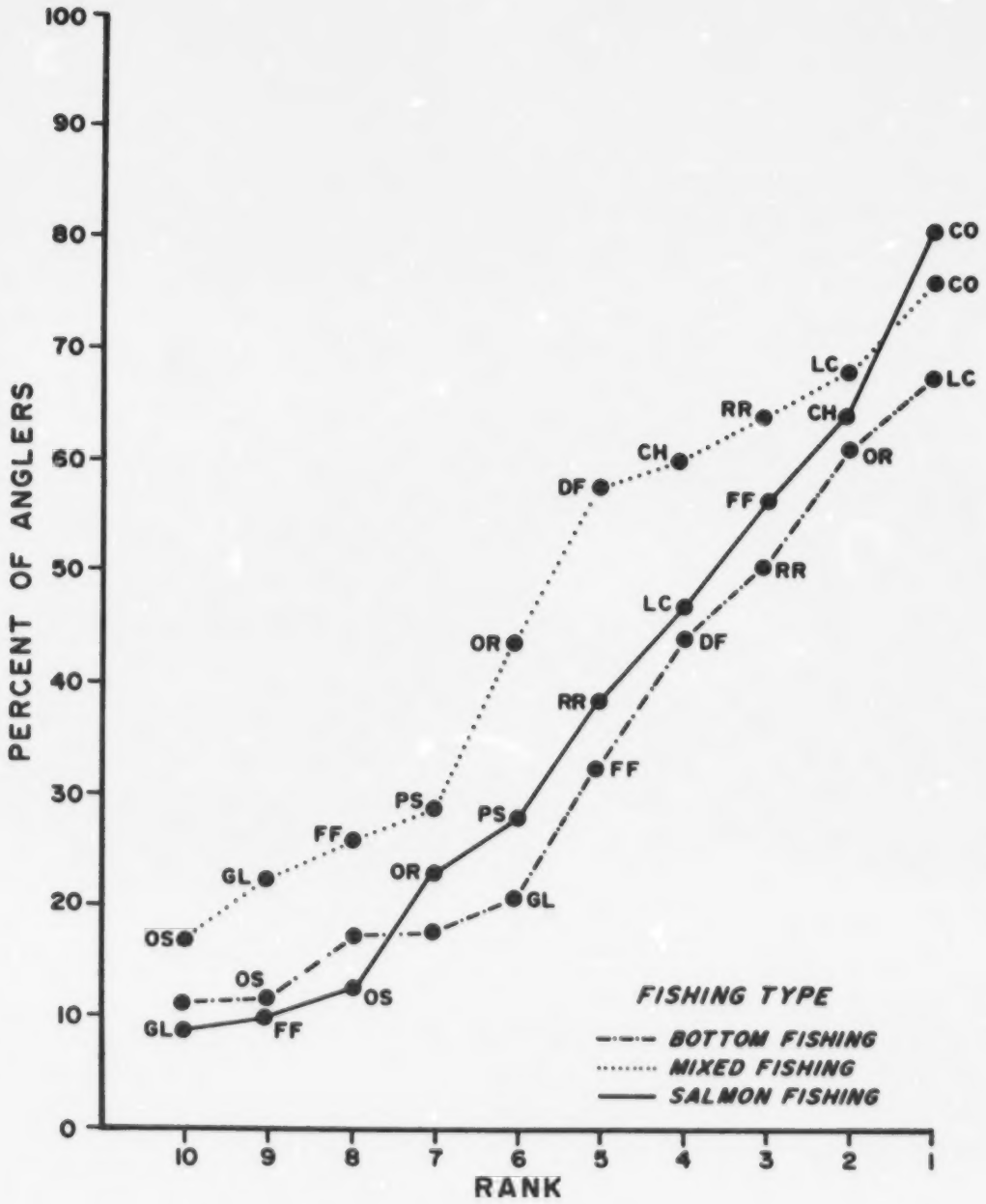


Fig. 5. Catch frequency profiles for the salmon, mixed and bottomfish angler groups. Refer to Table 12 for code descriptions.

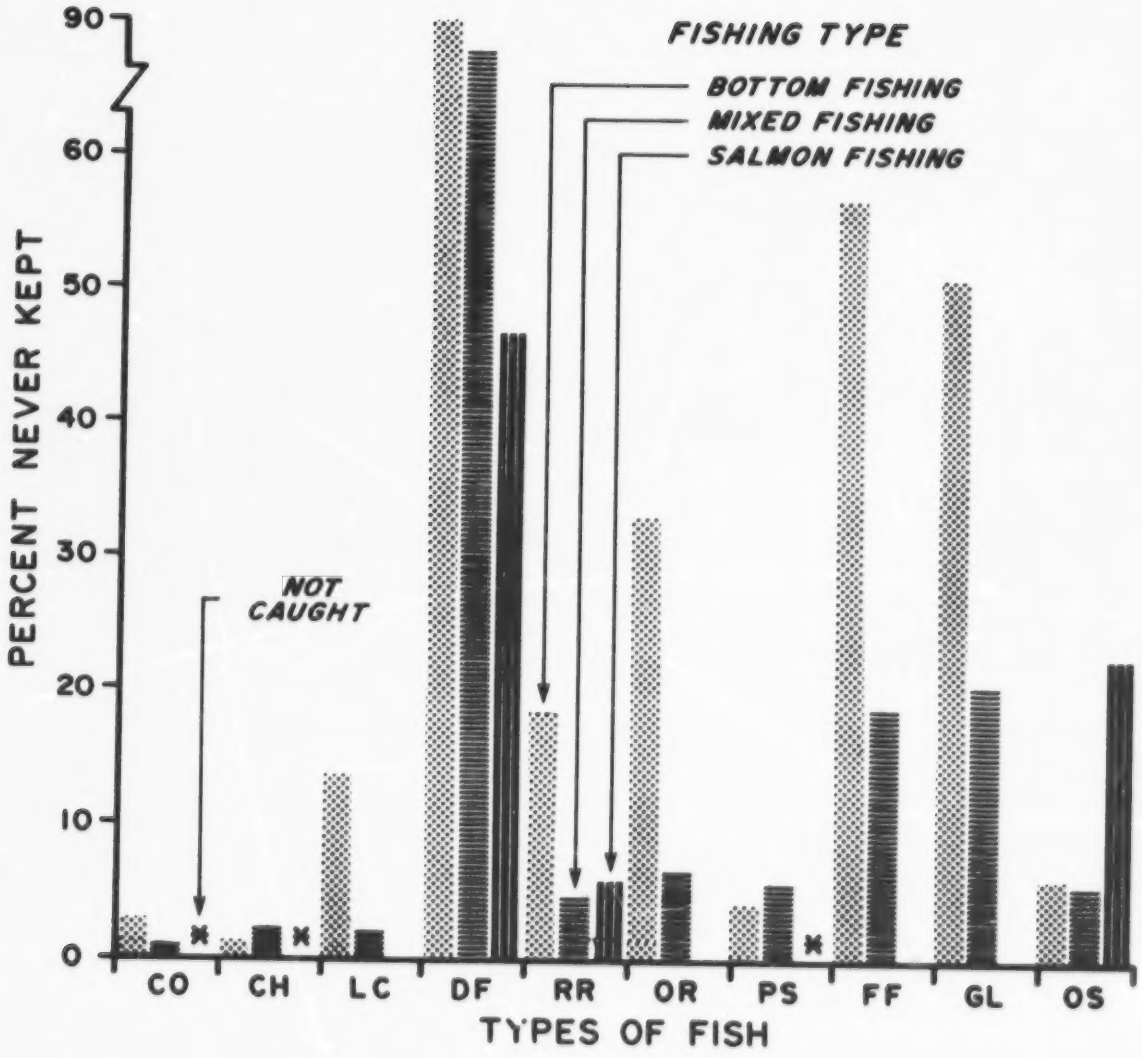


Fig. 6. Retention characteristics for fish caught by respondents in the salmon, mixed and bottomfish angler groups.

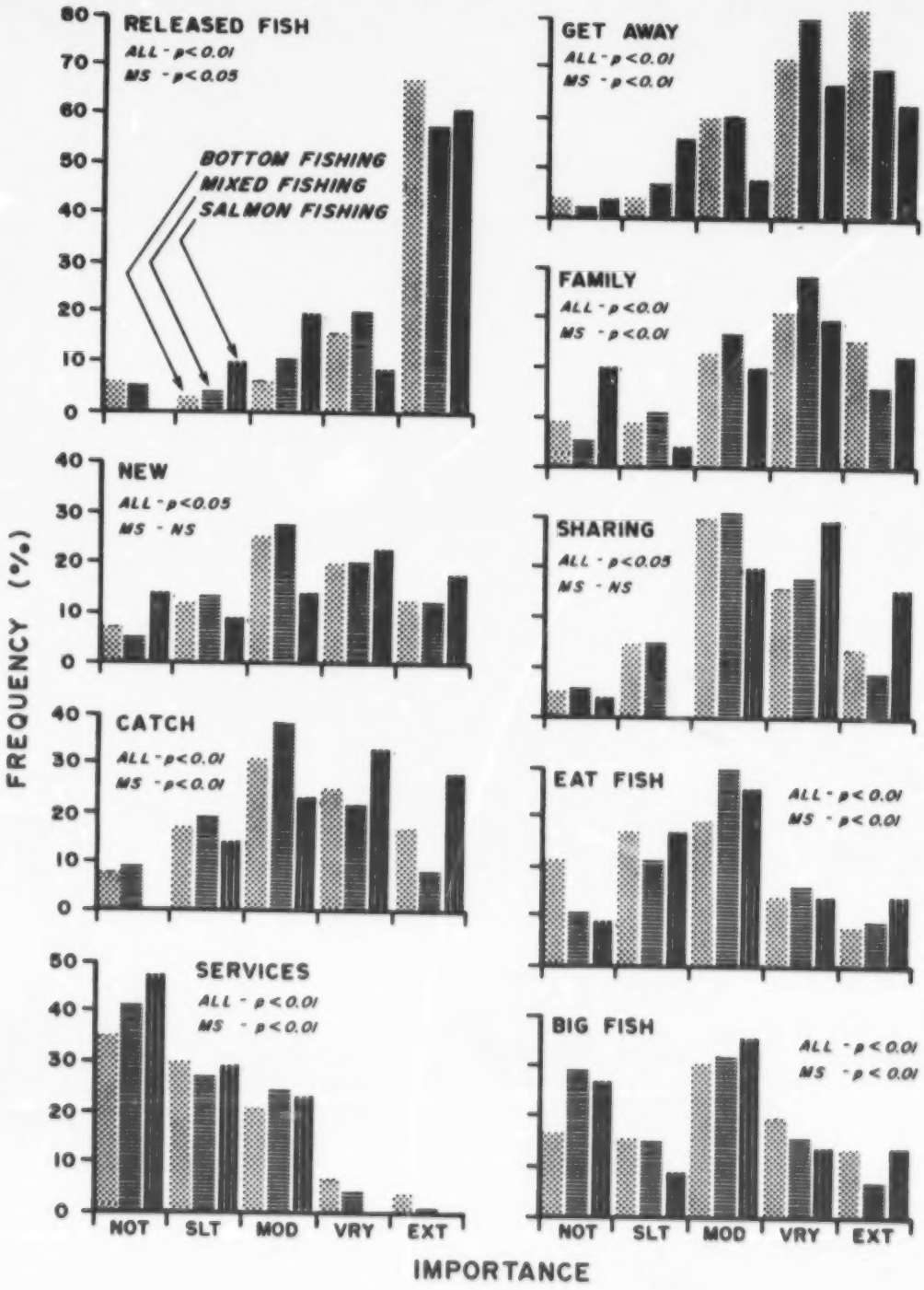


Fig. 7. Responses to the motivational items by salmon, mixed and bottomfish angler groups.

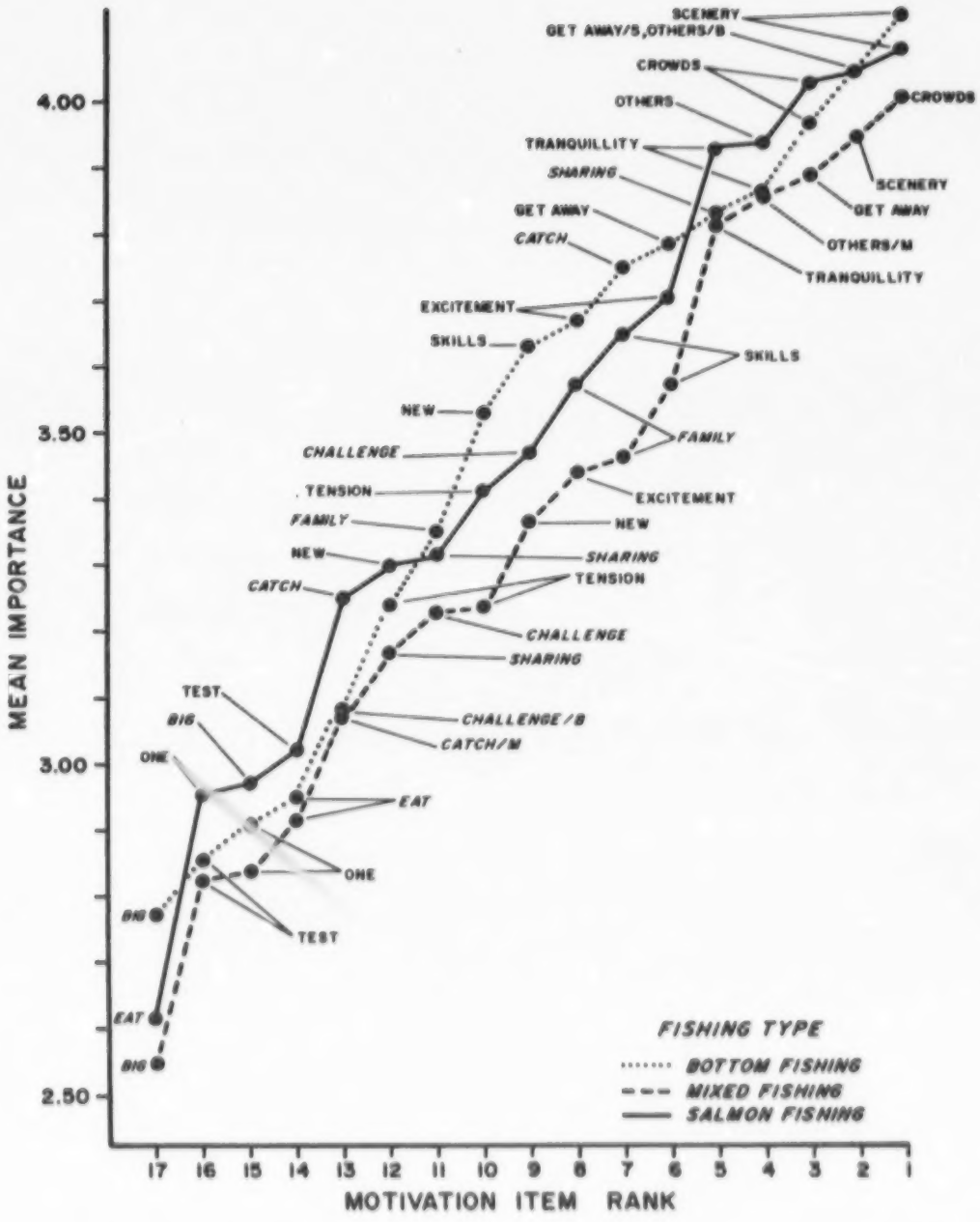


Fig. 8. Profile of motivation item importance for the salmon, mixed and bottomfish angler groups. Refer to Table 17 for code descriptions. Items in italics are significantly different.

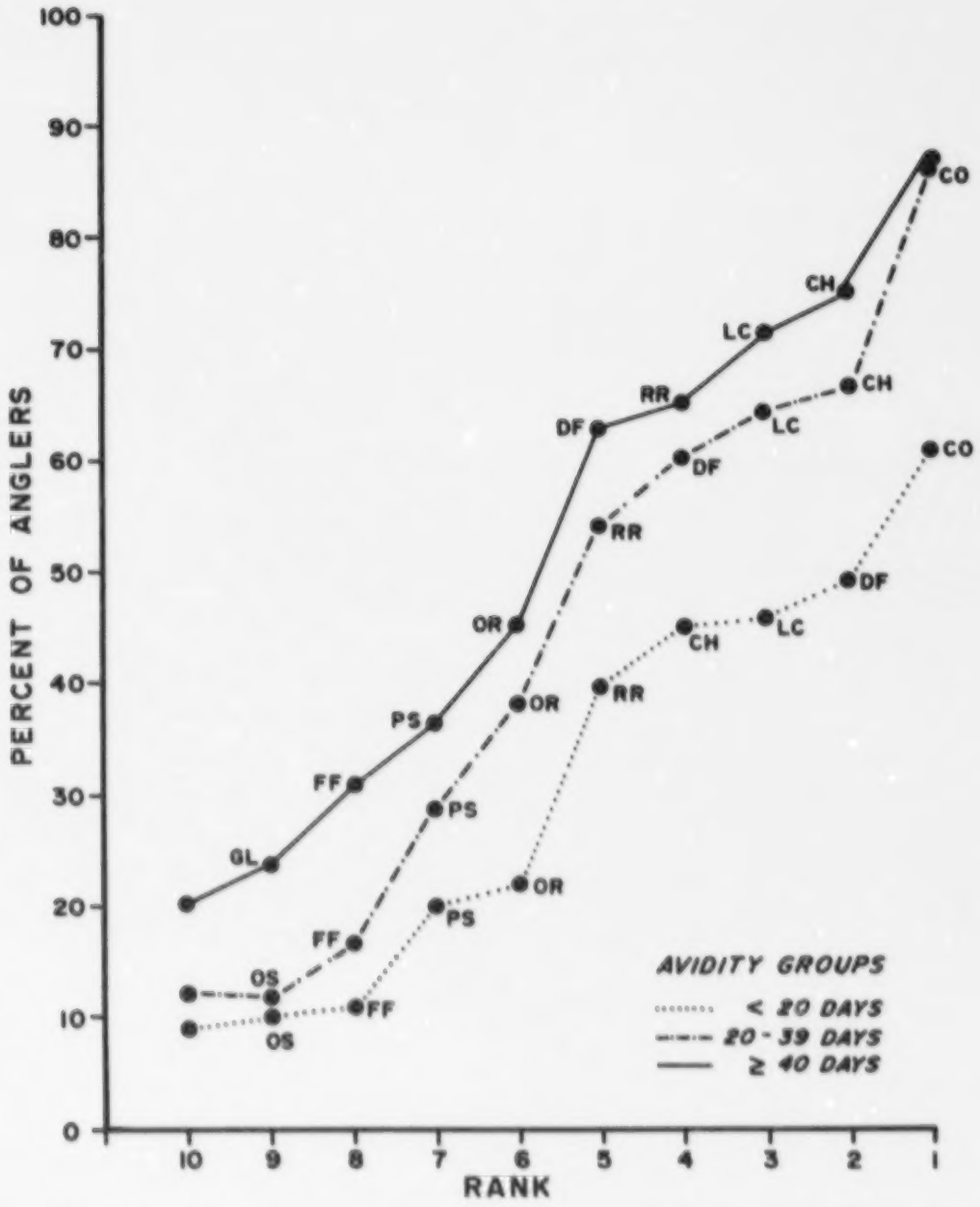


Fig. 9. Catch frequency profiles for the avidity groups. Refer to Table 12 for code descriptions.

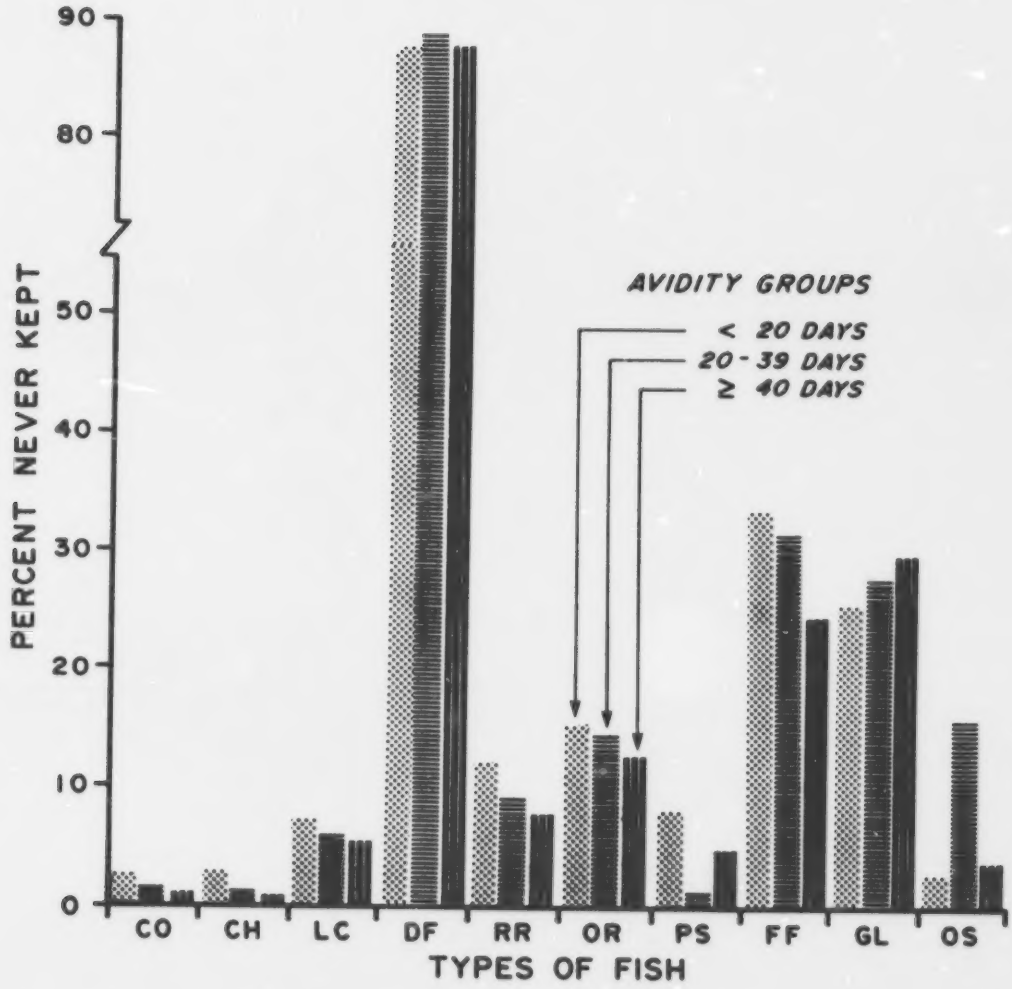


Fig. 10. Retention characteristics for fish caught by respondents in the three avidity groups.

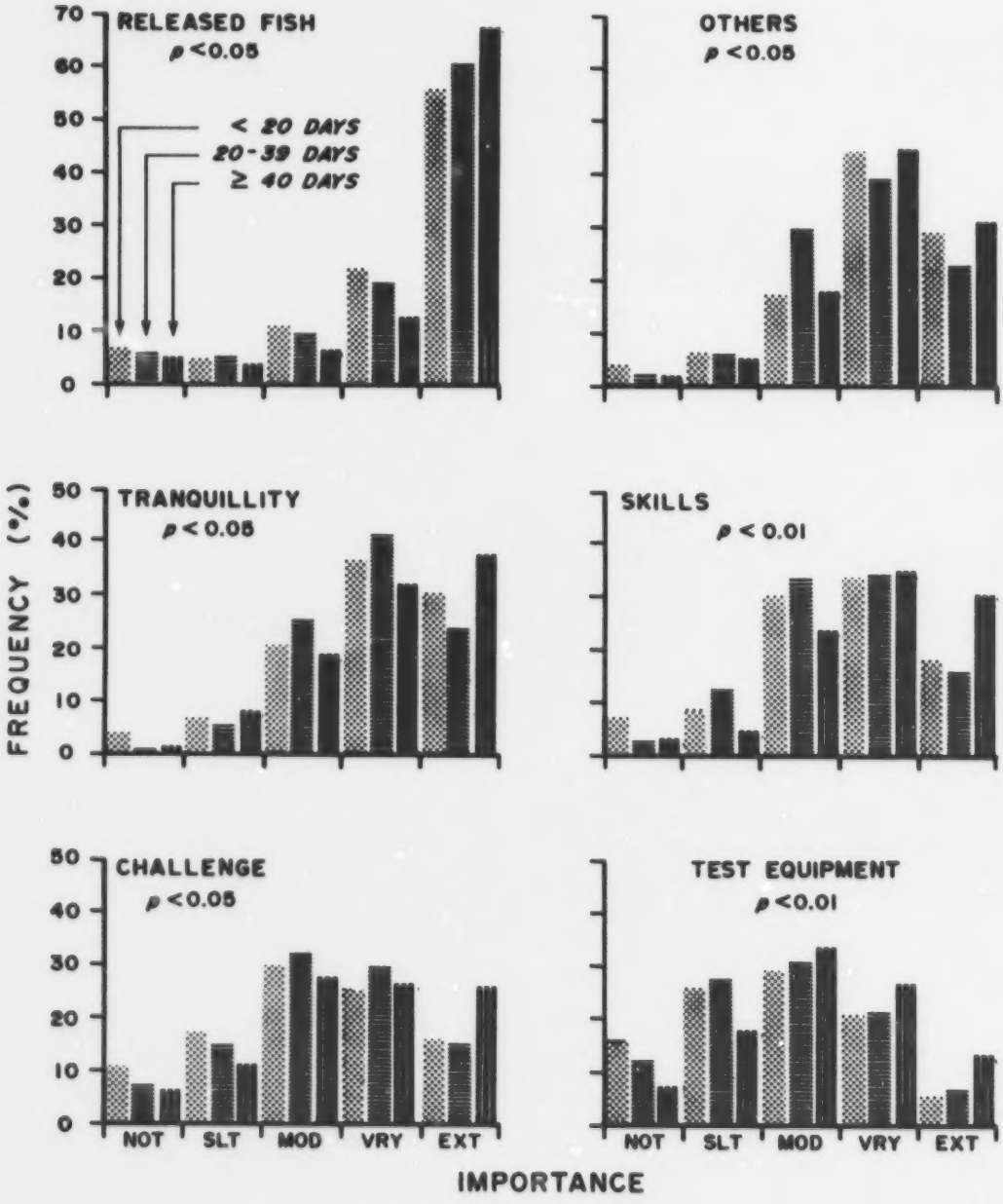


Fig. 11. Responses to motivational items by the three avidity groups.

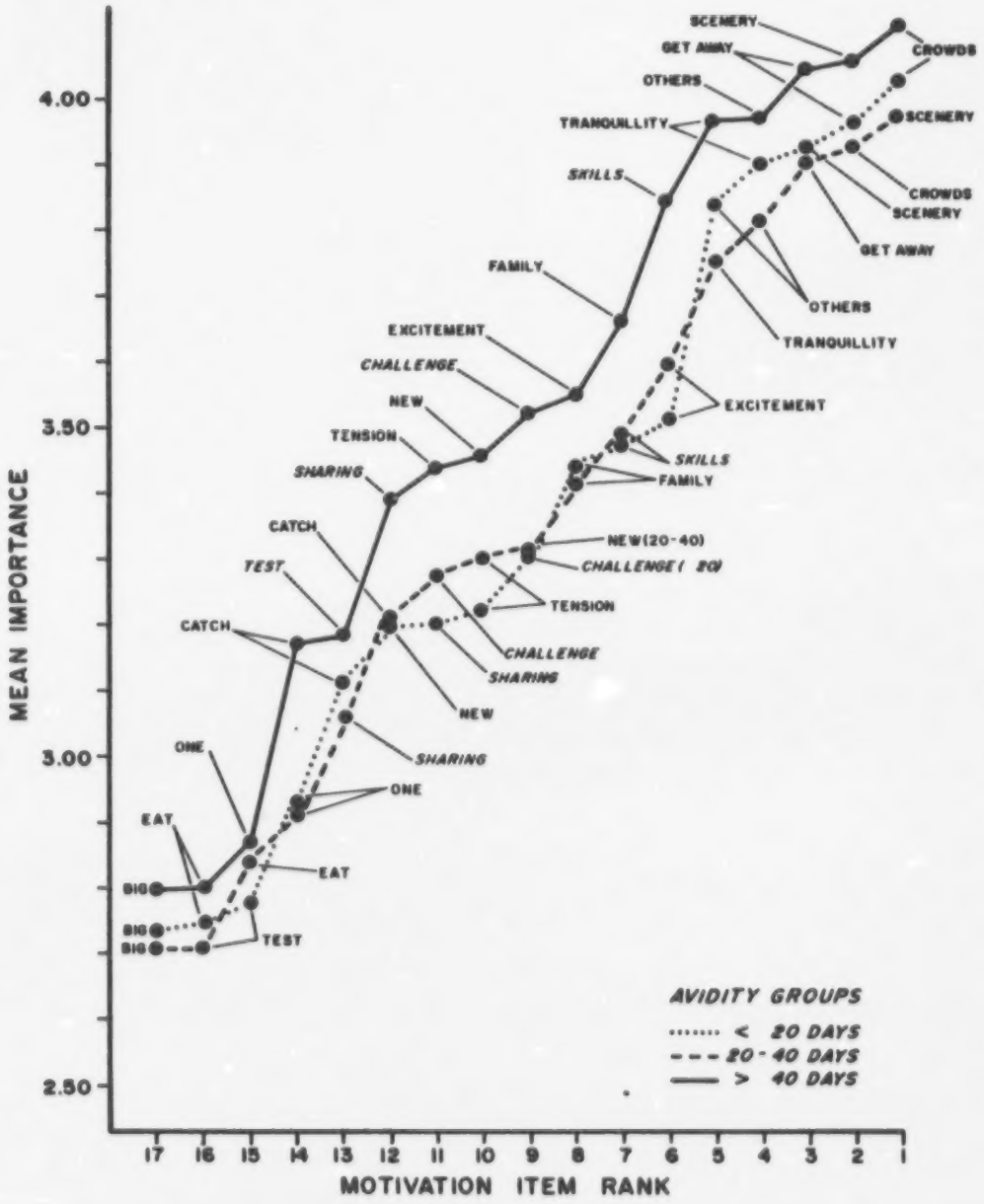


Fig. 12. Profiles of motivational item importance for the three avidity groups. Refer to Table 12 for code descriptions. Items in italics are significantly different.

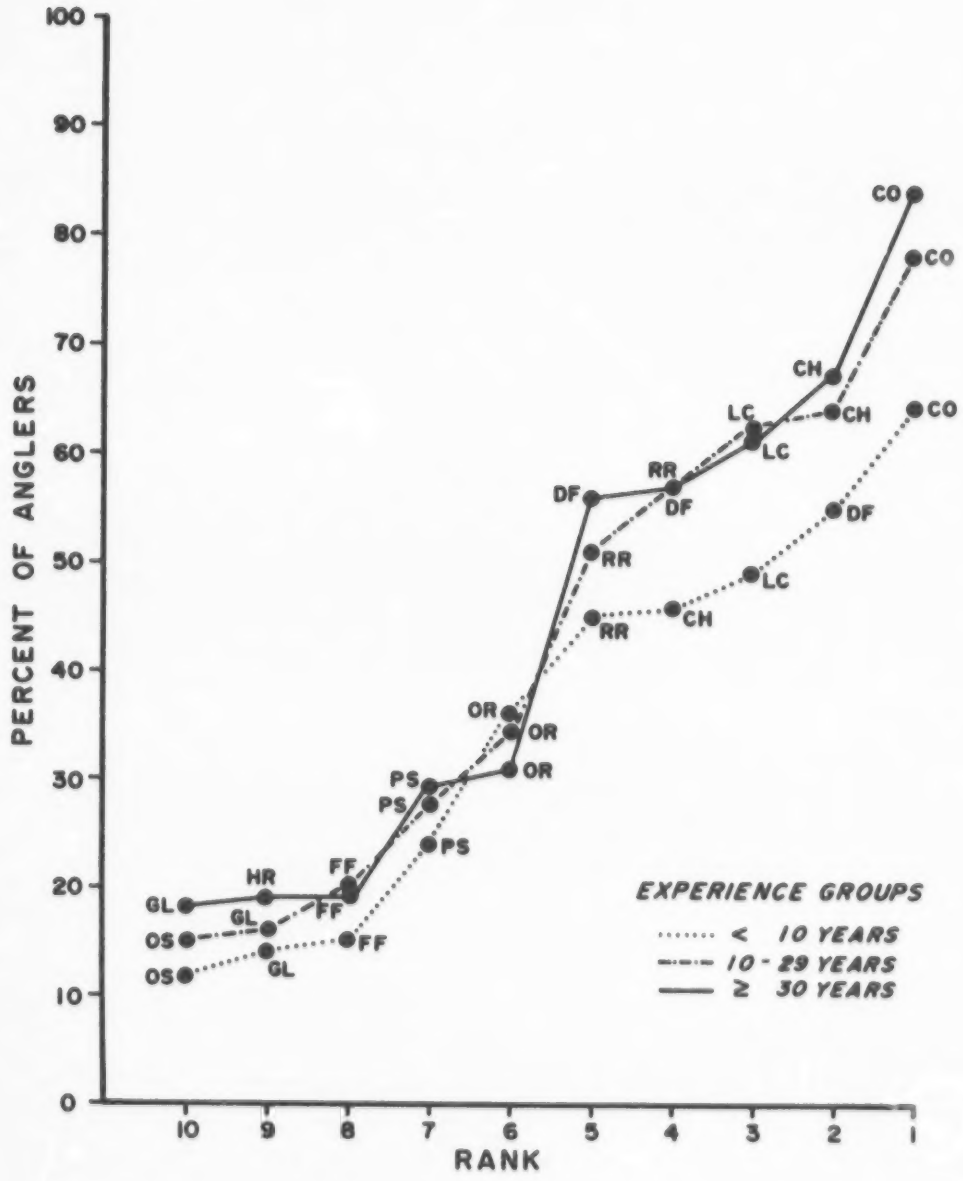


Fig. 13. Catch frequency profiles for the experience groups. Refer to Table 12 for code descriptions.

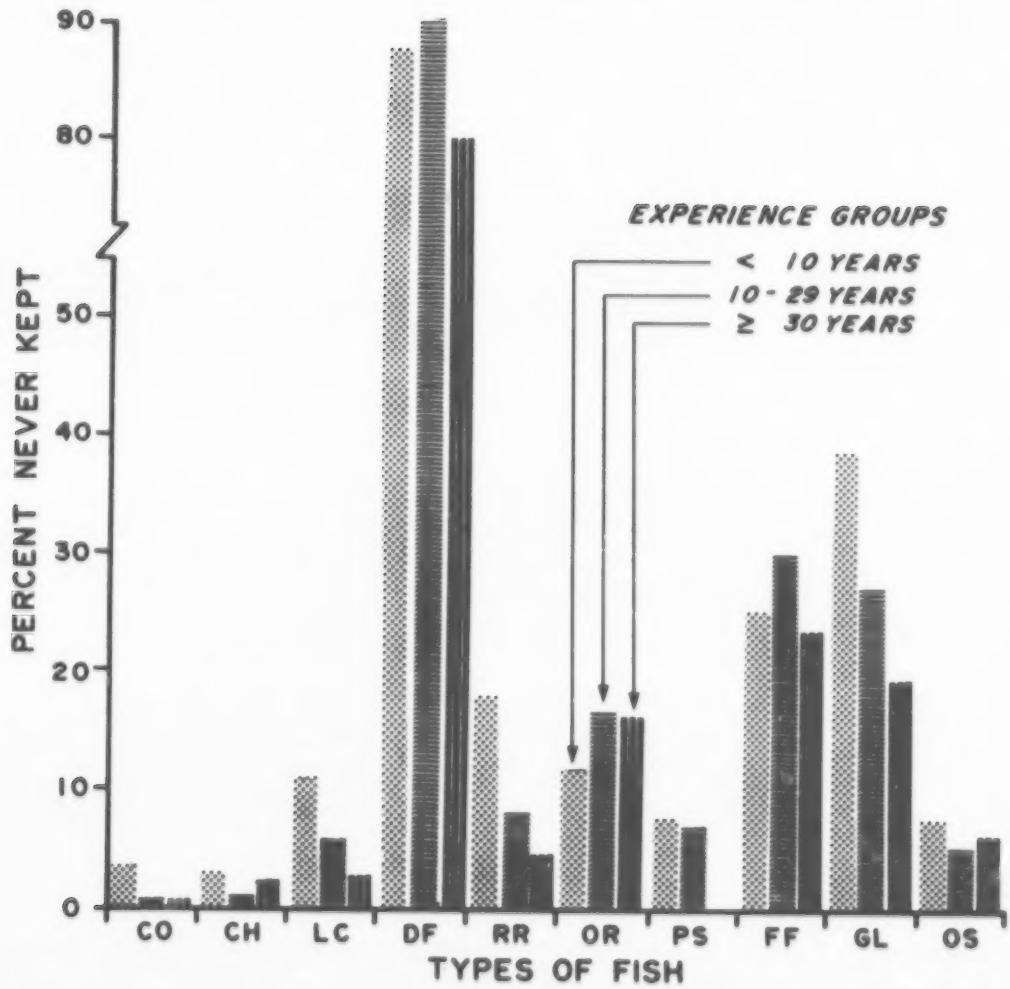


Fig. 14. Retention characteristics for fish caught by respondents in the three experience groups.

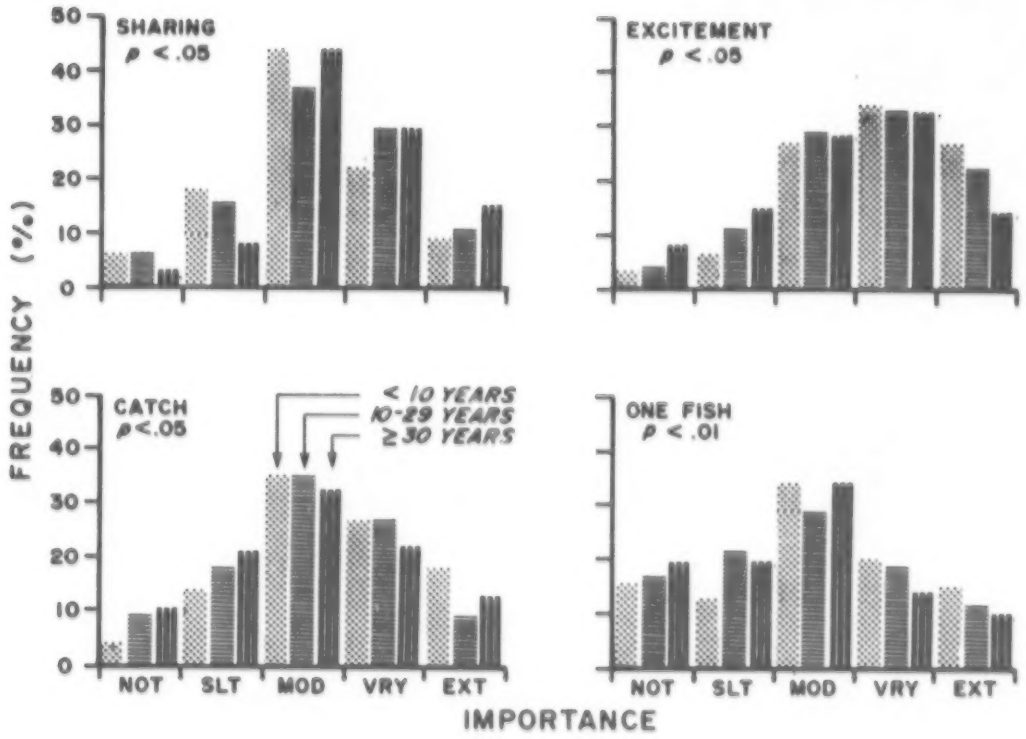


Fig. 15. Responses to motivational items by the three experience groups.

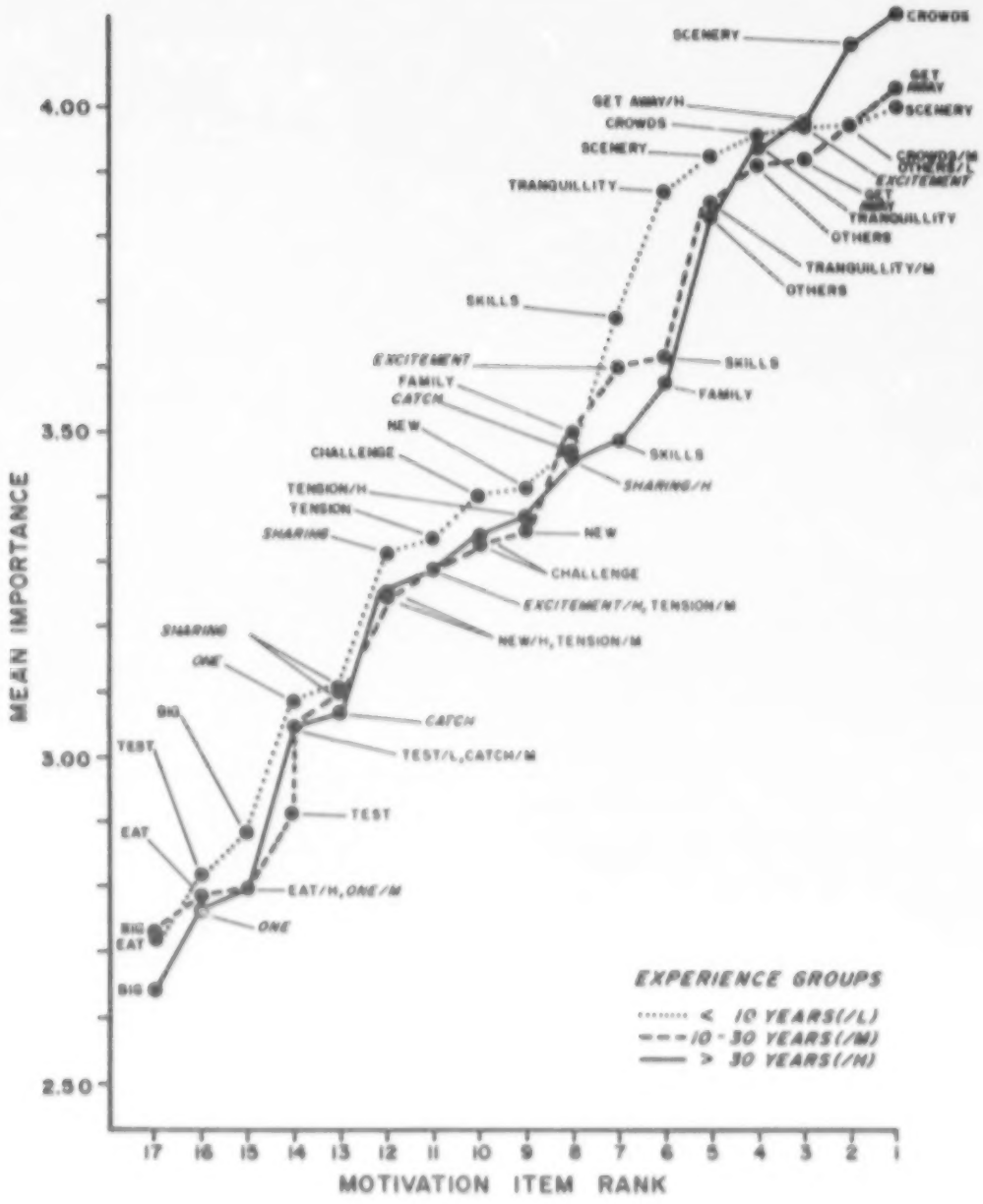


Fig. 16. Profiles of motivational item importance for the three experience groups. Refer to Table 17 for code descriptions. Items in italics are significantly different.

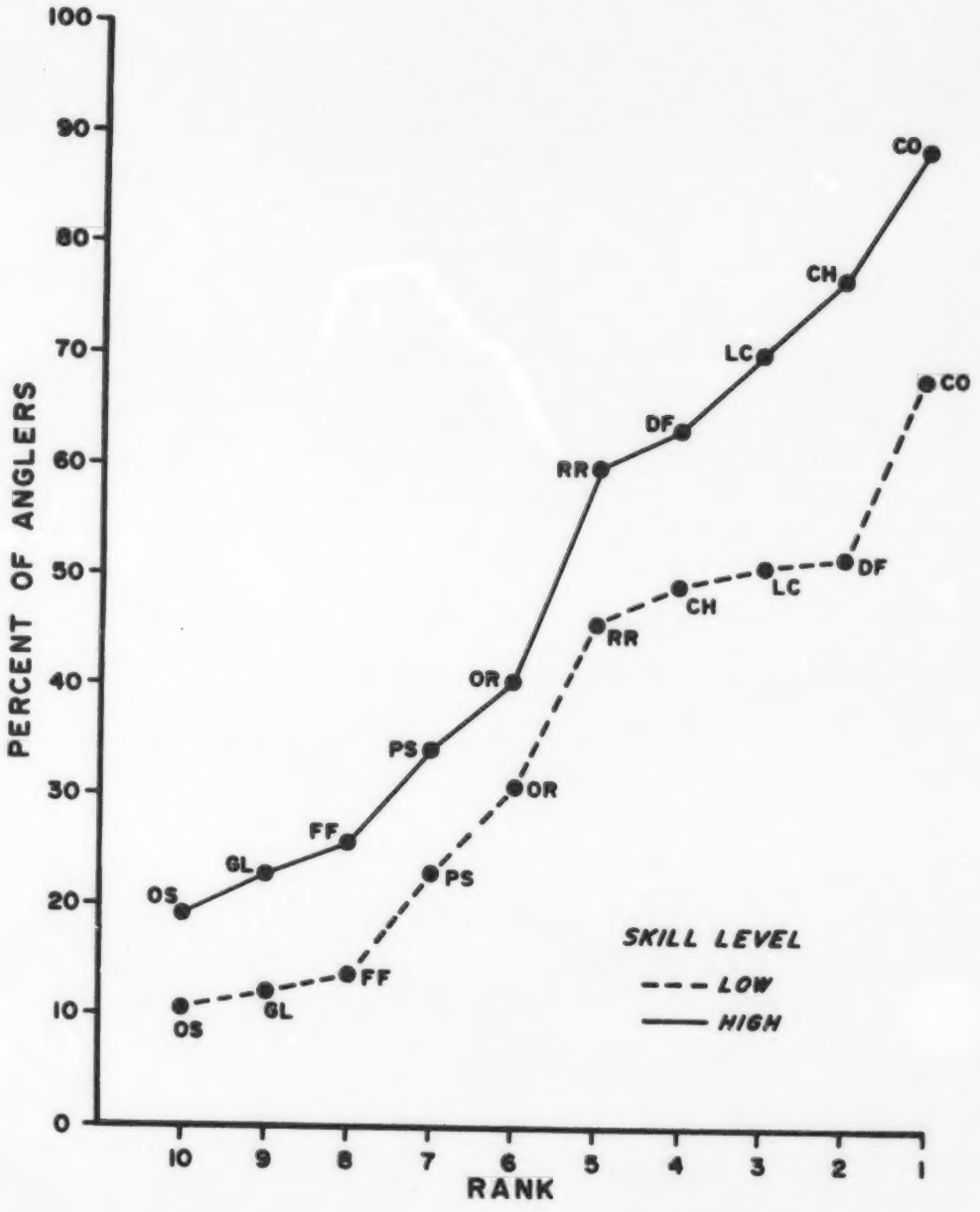


Fig. 17. Catch frequency profiles for the skill groups. Refer to Table 12 for code descriptions.

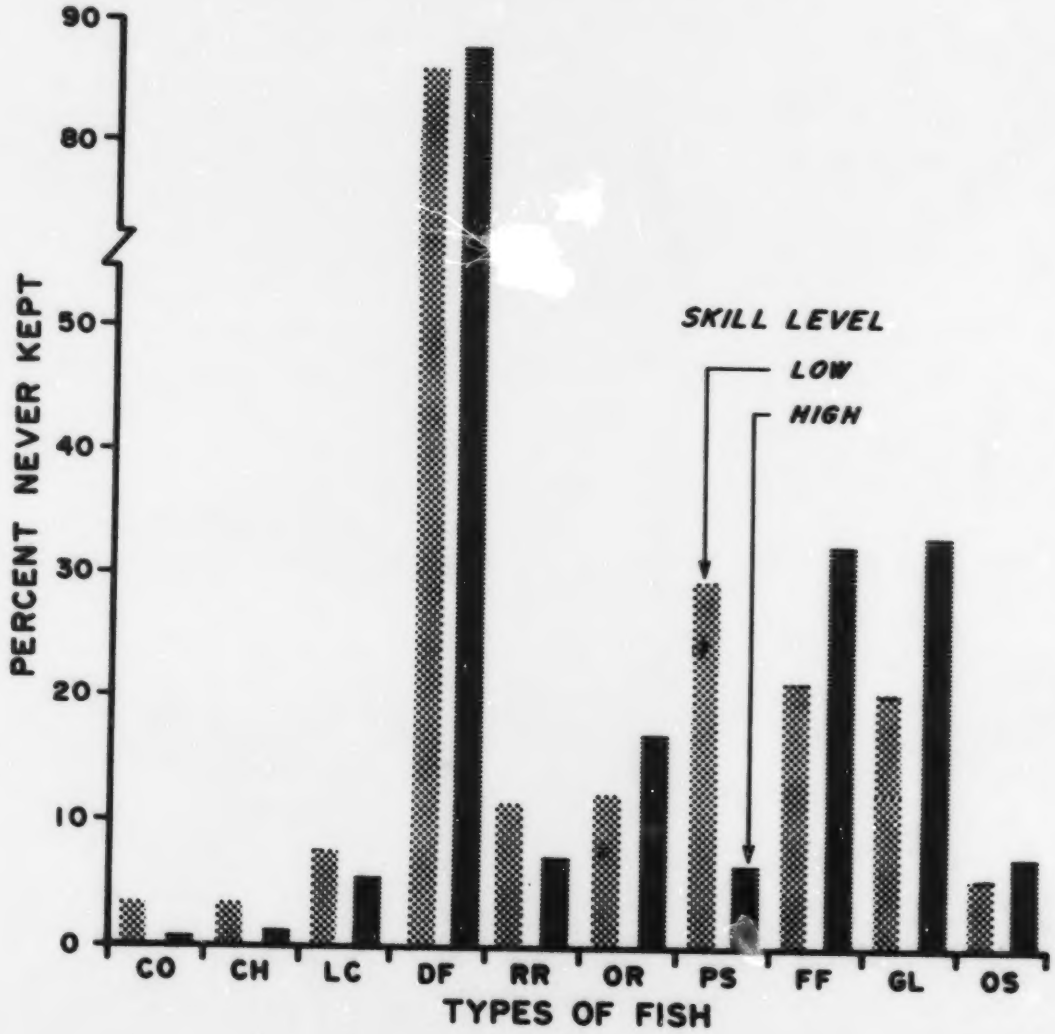


Fig. 18. Retention characteristics for fish caught by respondents in the two skill groups.

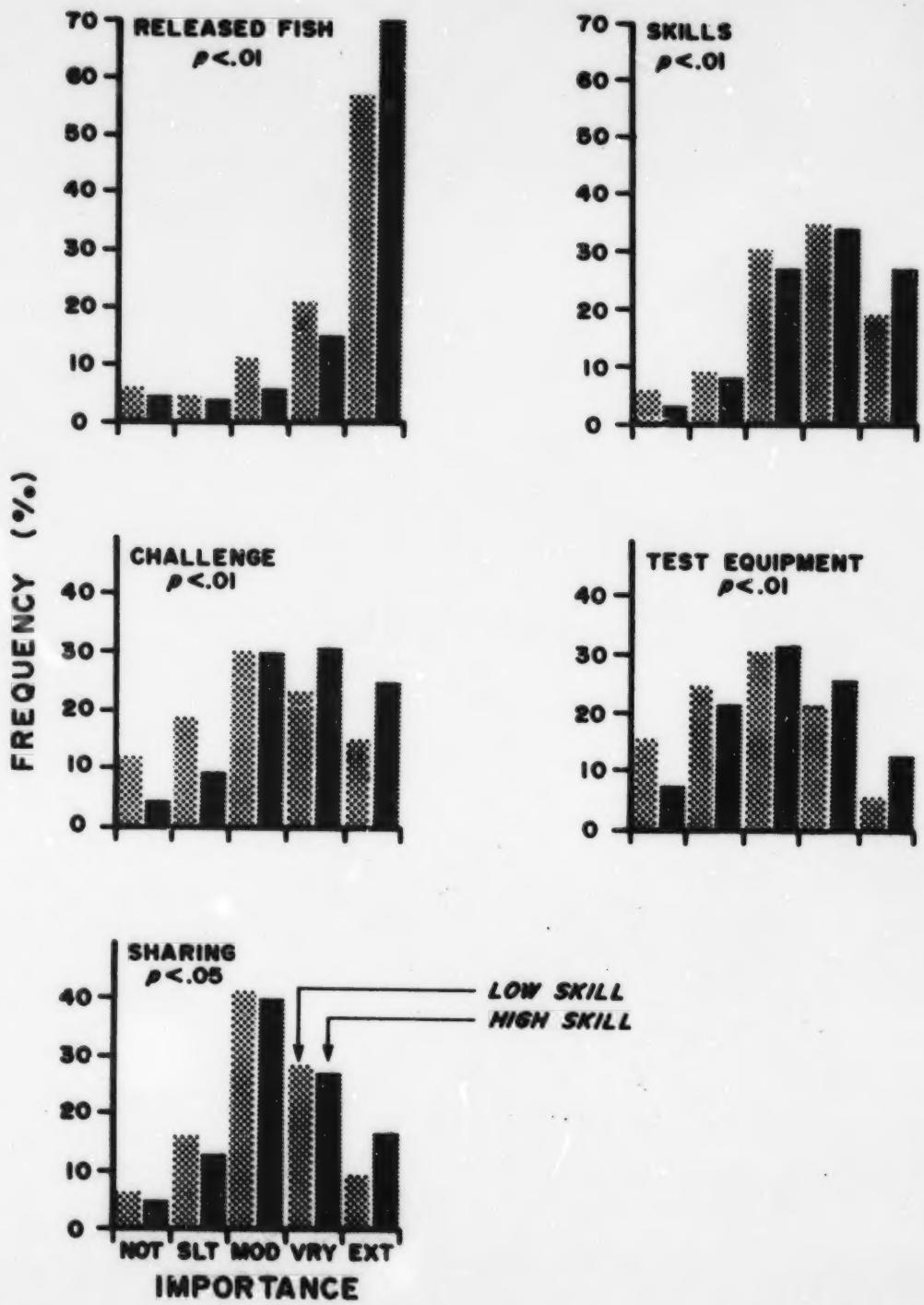


Fig. 19. Responses to motivational items by respondents in the two skill groups.

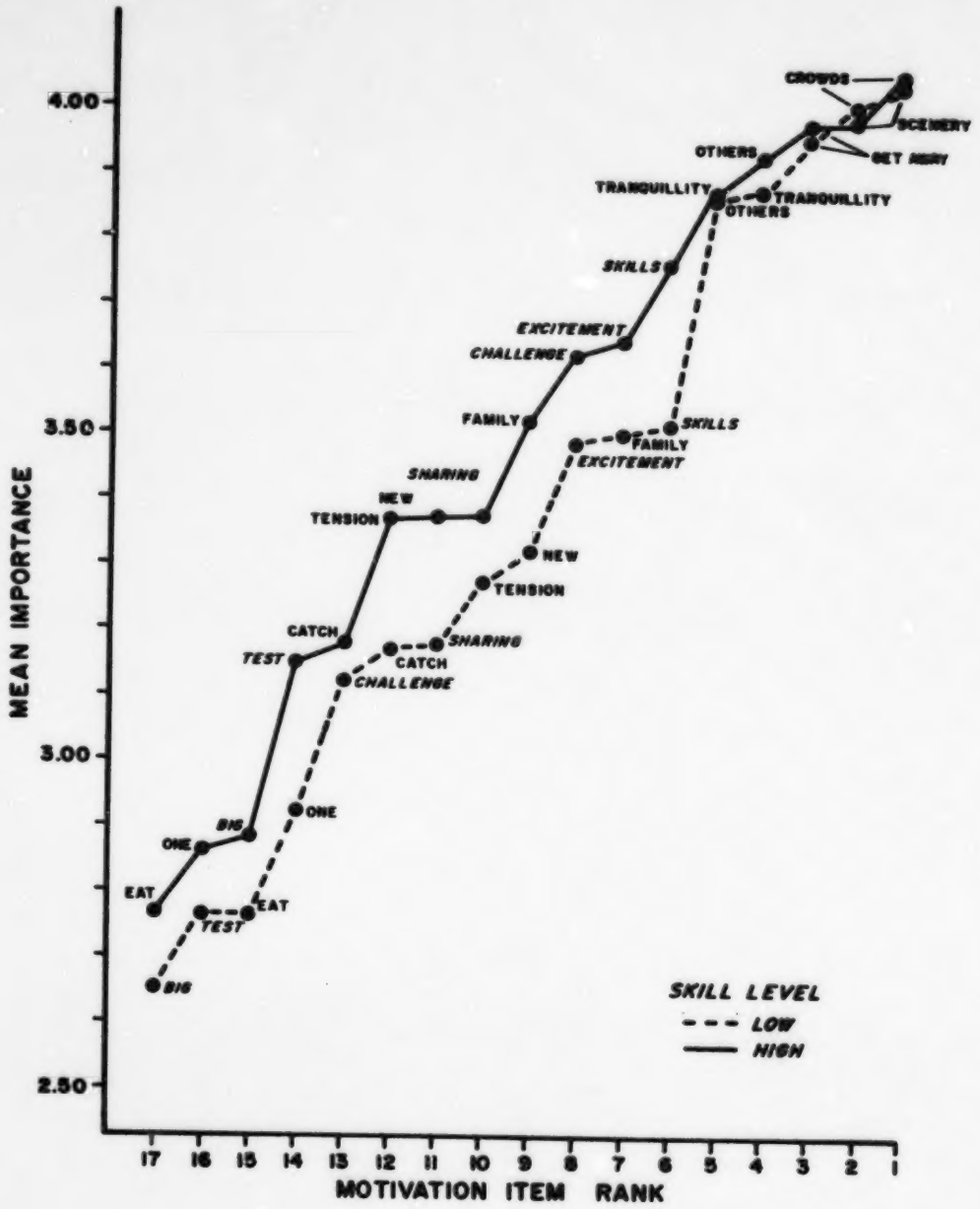


Fig. 20. Profiles of motivational item importance for the two skill groups. Refer to Table 17 for code descriptions. Items in italics are significantly different.

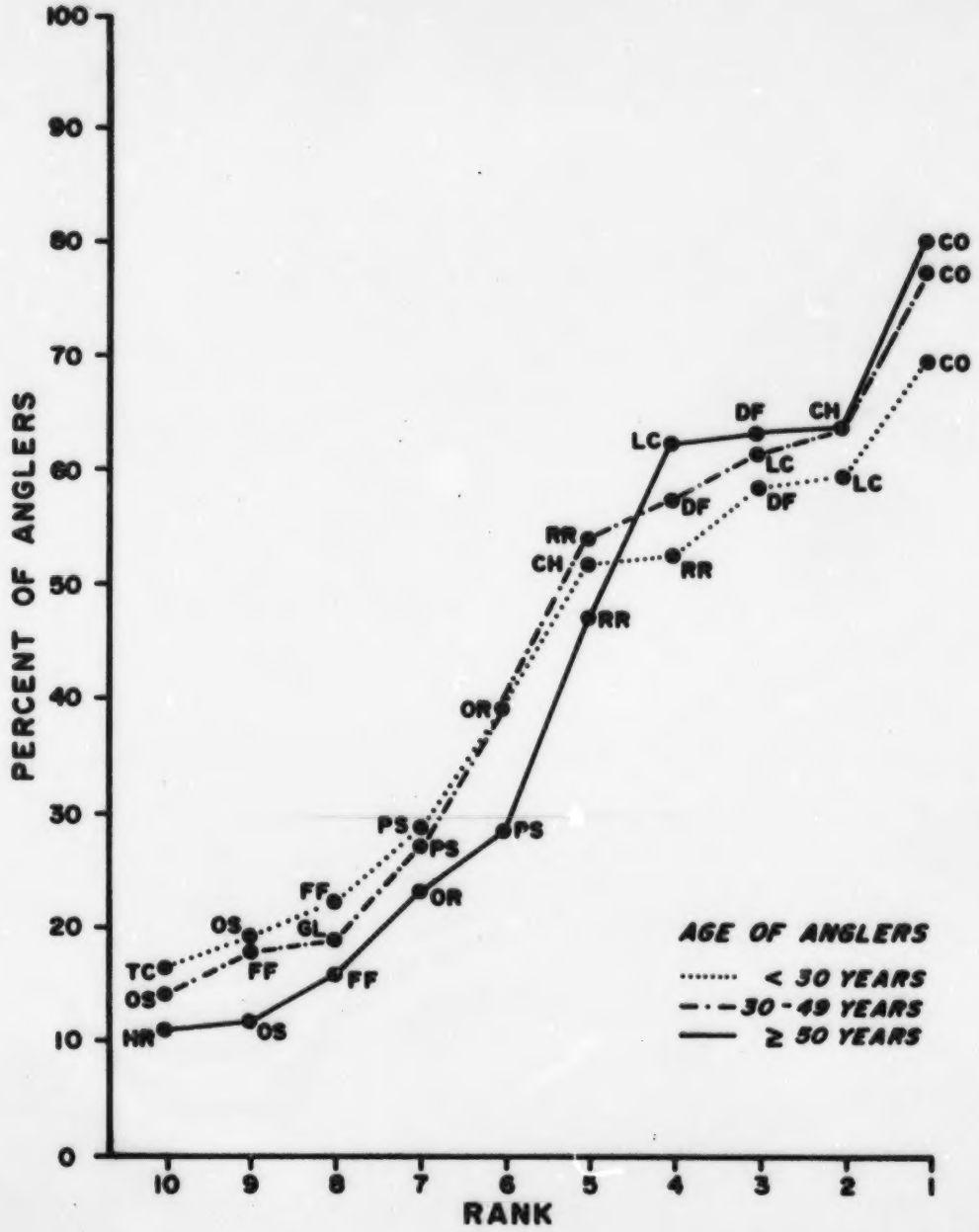


Fig. 21. Catch frequency profiles for the age groups. Refer to Table 12 for code descriptions.

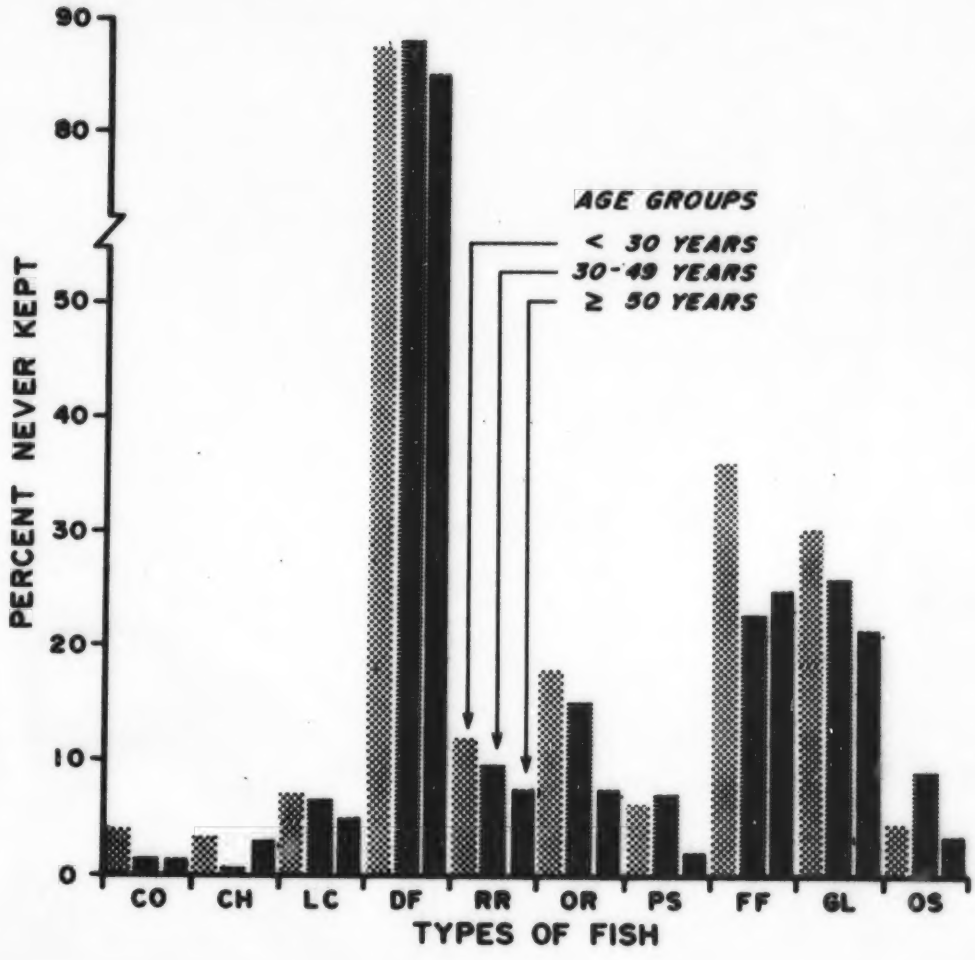


Fig. 22. Retention characteristics for fish caught by respondents in the three age groups.

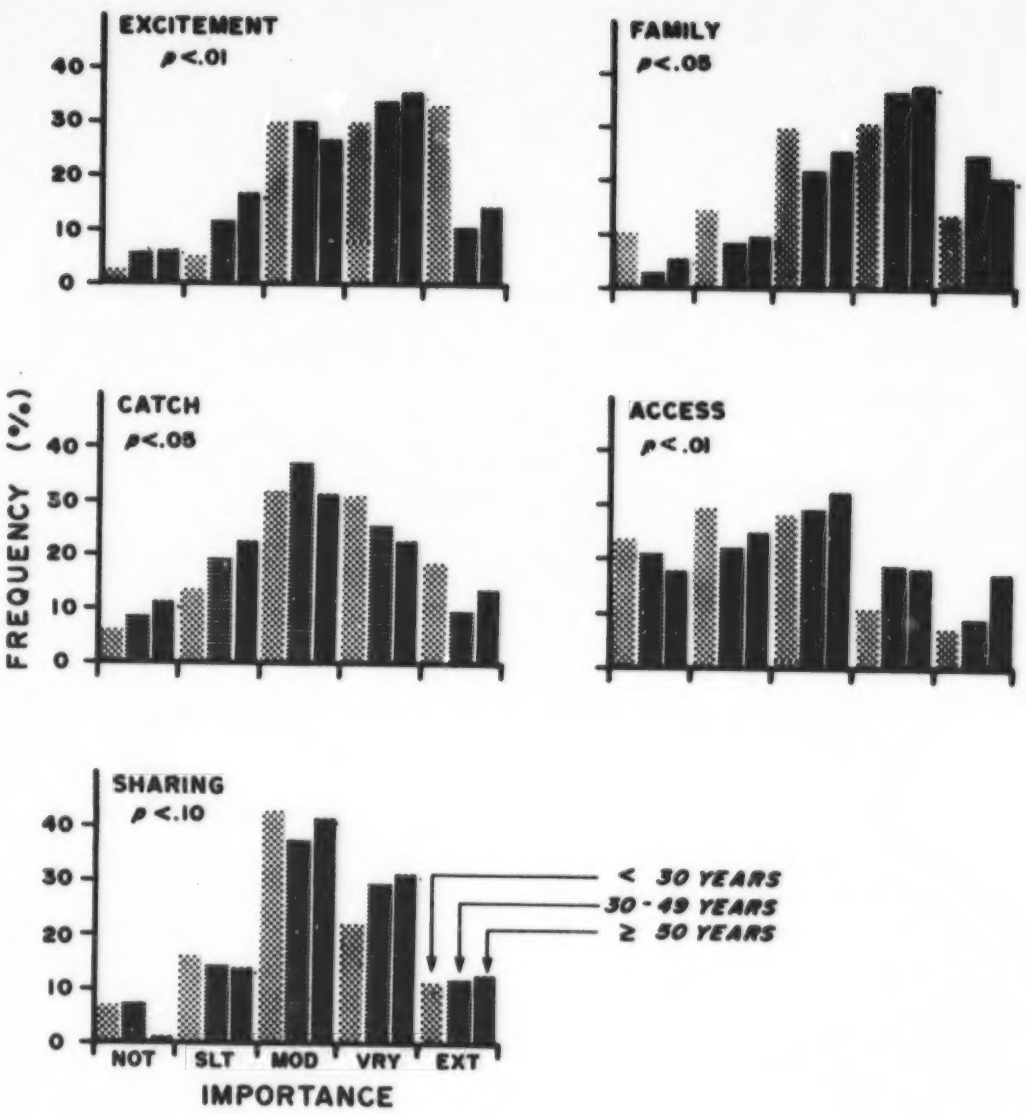


Fig. 23. Responses to motivational items for the three age groups.

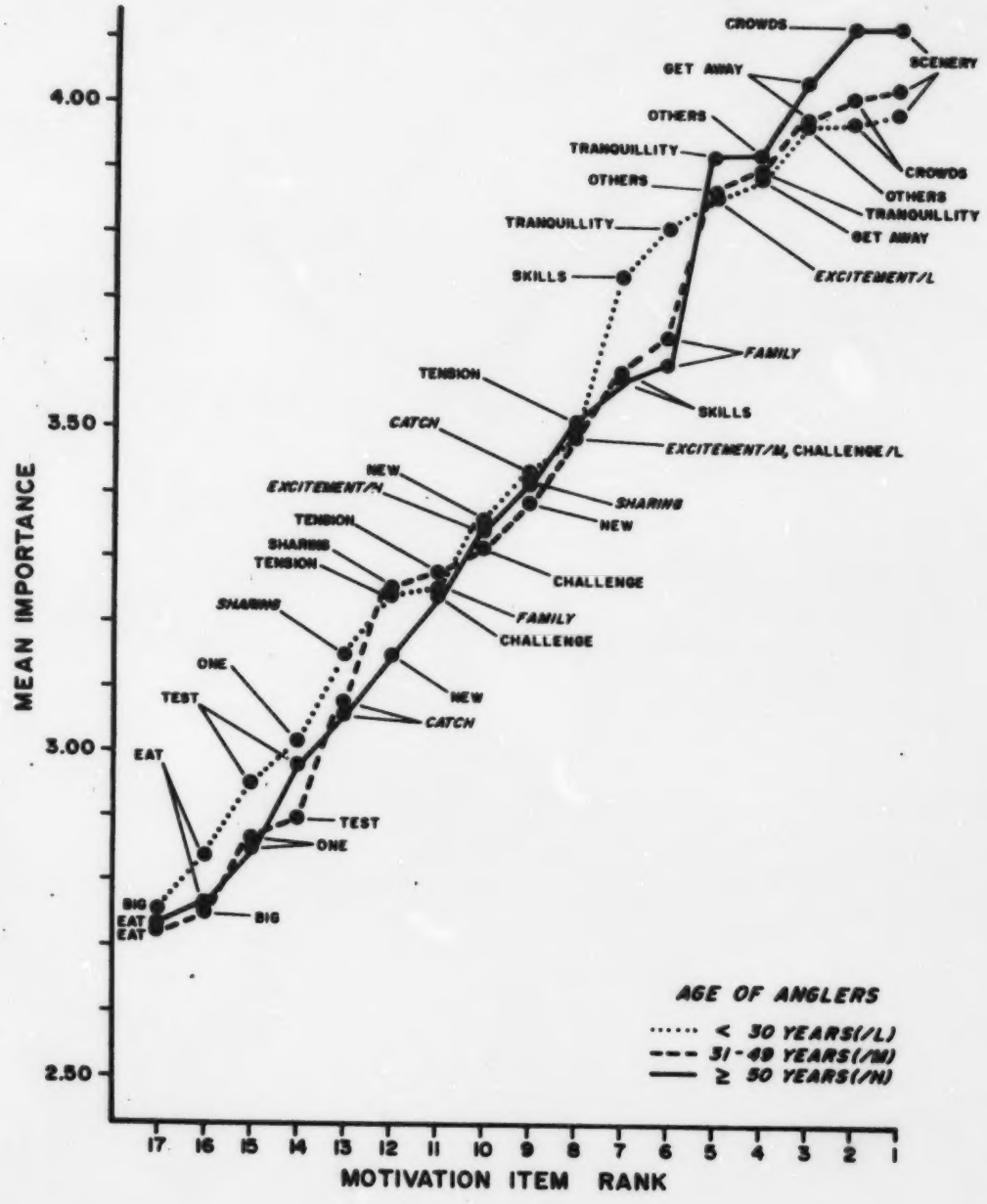


Fig. 24. Profiles of motivational item importance for the three age groups. Refer to Table 17 for code descriptions. Items in italics are significantly different.

APPENDIX A. Survey questionnaire.

1984

SALTWATER RECREATIONAL FISHING STUDY

This questionnaire is designed to learn more about the recreational needs and preferences of saltwater anglers in B. C. Your answers will assist in better understanding recreational saltwater fishing experiences. Please take a few minutes to complete the following questions. All responses will be confidential.

SECTION "A"

THE FOLLOWING GROUP OF QUESTIONS APPLY TO ALL SALTWATER FISHING ACTIVITIES YOU MAY PARTICIPATE IN:

1. Where is your permanent place of RESIDENCE?

_____City _____Province/State

2. Are you a member of a fishing or outdoor CLUB?

[ ] Yes [ ] No

3. Please check the GROUP(S) that you fish with:

[ ] Family [ ] Friends [ ] By myself [ ] Fishing club

[ ] Fishing charter [ ] Fishing guide [ ] Business associates

Which group do you fish with MOST OFTEN?_____

APPENDIX A (cont'd)

4. What level of SKILL would you classify yourself as having?

[ ] Beginner [ ] Intermediate [ ] Advanced [ ] Expert

5. How many YEARS have you been fishing?

_____YEARS

6. What is the average ONE-WAY DRIVING DISTANCE from your residence to where you fish MOST OFTEN (ie, launch, pier, or shore site)?

_____ONE-WAY DISTANCE in MILES

7. How many DAYS did you saltwater fish during the last FOUR SEASONS?

NUMBER OF DAYS	SEASON
_____	Winter, 1983 (Jan., Feb., March)
_____	Spring, 1983 (April, May, June)
_____	Summer, 1983 (July, Aug., Sept.)
_____	Fall, 1983 (Oct., Nov., Dec.)

8. What PERCENT of your total fishing days was spent at each of the following MODES. (Please check one box for EACH mode)

MODE	PERCENT				
	0%	1-25%	26-50%	51-75%	76-100%
Private boat. .	[ ]	[ ]	[ ]	[ ]	[ ]
Charter boat. .	[ ]	[ ]	[ ]	[ ]	[ ]
Dock/pier . . .	[ ]	[ ]	[ ]	[ ]	[ ]
Shore	[ ]	[ ]	[ ]	[ ]	[ ]

APPENDIX A (cont'd)

SECTION "B"

THE NEXT FEW QUESTIONS DEAL WITH THE TYPE OF SALTWATER FISHING YOU MOSTLY PARTICIPATE IN:

1. From the fish listed below, please CHECK the KINDS that were caught and CIRCLE how frequently they were KEPT (if legal).

KINDS OF FISH	FISH CAUGHT (✓)	never kept 1	sometimes kept 2	always kept 3
A. SALMON				
Not able to classify. . . .	[ ]	1	2	3
Coho	[ ]	1	2	3
Chinook.	[ ]	1	2	3
Pink	[ ]	1	2	3
Other salmon	[ ]	1	2	3
B. BOTTOM FISH				
Not able to classify. . . .	[ ]	1	2	3
Rockfish (Rockcod)				
Red Snapper.	[ ]	1	2	3
Other Rockfish	[ ]	1	2	3
Lingcod.	[ ]	1	2	3
Greenling.	[ ]	1	2	3
Sculpin (Cabezon).	[ ]	1	2	3
Halibut.	[ ]	1	2	3
Other flatfish (Flounder, Turbot, sole, etc.) . . .	[ ]	1	2	3
Surf Perch	[ ]	1	2	3
True Cod (Cod, Pollack, Hake)	[ ]	1	2	3
C. OTHER FISH				
Shark (Dogfish).	[ ]	1	2	3
Herring.	[ ]	1	2	3
Specify _____	[ ]	1	2	3

2. Please indicate the TYPE of saltwater fishing you did most during 1983 (check only ONE):

[ ] Fishing effort divided between salmon and bottom fish

[ ] Exclusively salmon fishing

[ ] Exclusively bottom fishing

APPENDIX A (cont'd)

SECTION "C"

THIS SECTION APPLIES TO BOTTOM FISHING
IF YOU EXCLUSIVELY SALMON FISH, SKIP TO SECTION "D"

1. During 1983 what percentage of your TOTAL saltwater fishing time did you spend specifically at BOTTOM FISHING?

   [ ] 0% [ ] 1-25% [ ] 26-50% [ ] 51-75% [ ] 76-100%

2. Which DEPTH range do you usually fish at for BOTTOMFISH?

   [ ] under 25 ft. [ ] 25-75 ft. [ ] 76-150 ft. [ ] over 150 ft.

3. Do you use FISHING GEAR which is specialized for BOTTOM FISHING?

   [ ] Yes [ ] No [ ] Not sure

   If yes, please indicate which types:

   [ ] Light tackle [ ] Bait or lures
   [ ] Heavy tackle [ ] Depth/fish finder
   [ ] Hand line [ ] Navigation aids
   [ ] Down rigger [ ] Other _____

4. Please indicate the extent to which you AGREE or DISAGREE with each of the following statements. There are no right or wrong answers, so please give us your own opinion.

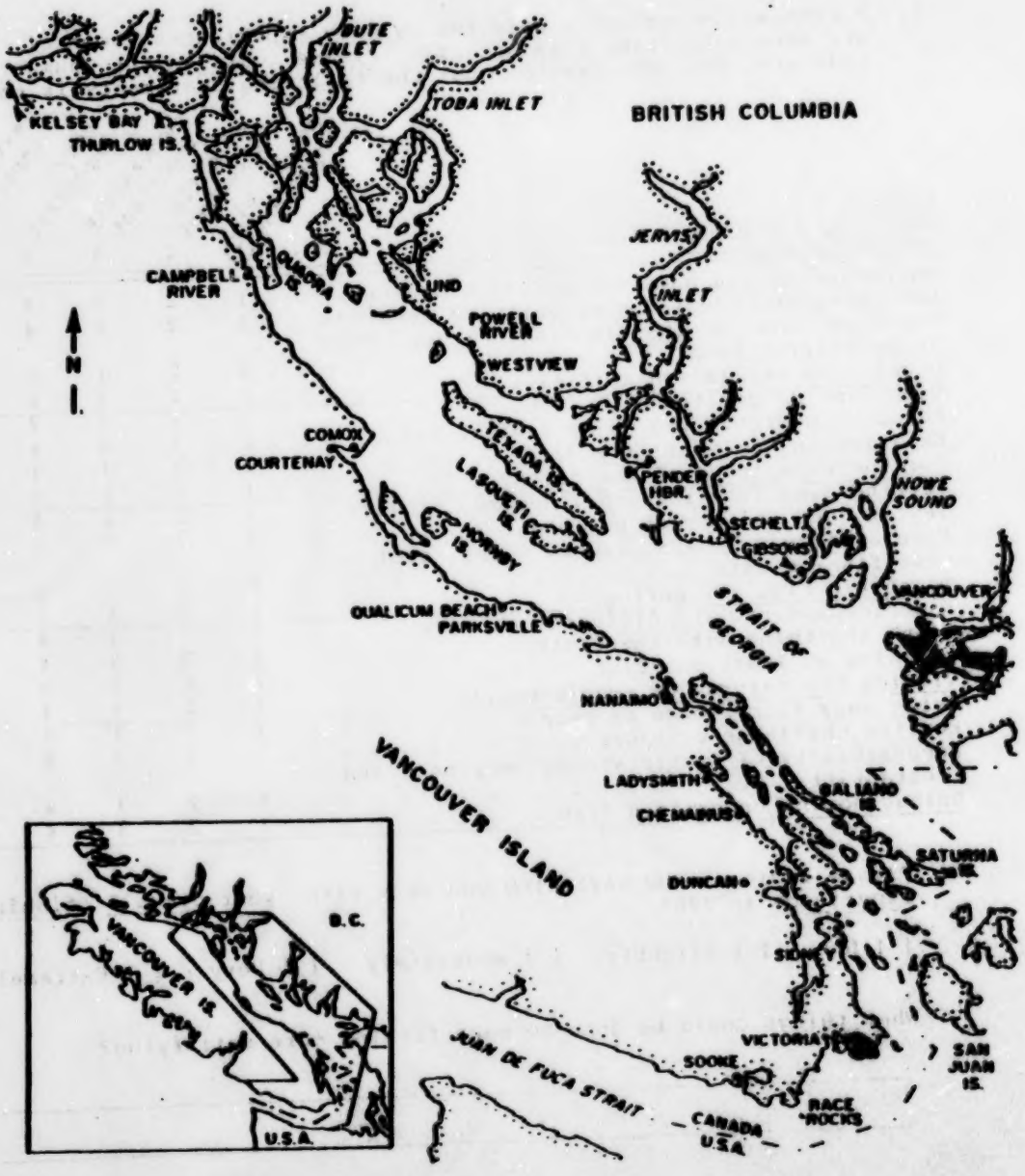
	strongly disagree	disagree	neutral	agree	strongly agree
On a typical fishing day I often alternate between salmon and bottom fishing	1	2	3	4	5
I like eating bottom fish more than salmon.	1	2	3	4	5
I would not fish for bottom fish if salmon were easier to catch.	1	2	3	4	5
When salmon fishing is poor I switch to bottom fishing.	1	2	3	4	5
Good bottom fishing areas are easier to identify than good salmon fishing areas	1	2	3	4	5
Bringing bottom fish home to eat is more important than catching them.	1	2	3	4	5
Salmon are more exciting to catch	1	2	3	4	5
Not catching any fish is less satisfying when bottom fishing than salmon fishing	1	2	3	4	5
Salmon fishing requires more patience.	1	2	3	4	5
Bottom fishing requires less skill	1	2	3	4	5
In the areas that I fish, bottom fishing is more productive than salmon fishing	1	2	3	4	5
The type of fish I catch doesn't matter.	1	2	3	4	5

APPENDIX A (cont'd)

SECTION "D"

ALL SALTWATER ANGLERS PLEASE INDICATE AS ACCURATELY AS POSSIBLE WITH AN "X" WHERE YOU FISHED IN 1983 ON THE MAP BELOW.

CIRCLE THE (X) WHERE YOU DID MOST OF YOUR RECREATIONAL FISHING



APPENDIX A (cont'd)

SECTION "E"

THIS SECTION APPLIES TO THE EXPERIENCES AND SATISFACTIONS OF SALTWATER FISHING

1. A recreation outing is affected by many experiences, some of which are more satisfying than others. Please circle the number that indicates HOW IMPORTANT each of the following statements is to you.

	not at all important	slightly important	moderately important	very important	extremely important
Example Chancing dangerous situations.	(1)	2	3	4	5
Sharing what you have learned with others. . . .	1	2	3	4	5
Releasing or reducing some built up tensions . .	1	2	3	4	5
Catching one or two big fish rather than many smaller fish	1	2	3	4	5
Developing skills and abilities.	1	2	3	4	5
Experiencing excitement.	1	2	3	4	5
Being with others who enjoy similar things . . .	1	2	3	4	5
Experiencing tranquillity.	1	2	3	4	5
For the experience of the catch.	1	2	3	4	5
Getting away from the usual demands of life. . .	1	2	3	4	5
Testing and using your equipment	1	2	3	4	5
Ease of access (roads, launch ramps, etc) to the fishing site.	1	2	3	4	5
To obtain fish for eating.	1	2	3	4	5
Experiencing new and different things.	1	2	3	4	5
Doing something with the family.	1	2	3	4	5
Catching at least one fish	1	2	3	4	5
Viewing the natural or scenic beauty	1	2	3	4	5
Being away from crowds of people	1	2	3	4	5
For the challenge or sport	1	2	3	4	5
Accessibility of tackle shops, marinas and restaurants	1	2	3	4	5
Releasing the undersized fish.	1	2	3	4	5

2. Please indicate HOW SATISPIED you were with your overall fishing experience in 1983.

[ ] Not [ ] Slightly [ ] Moderately [ ] Very [ ] Extremely

3. What things could be done to make fishing more satisfying?

_____

_____

APPENDIX A (cont'd)

SECTION "F"

THE REMAINING QUESTIONS ARE ABOUT YOU PERSONALLY AND WILL HELP US TO KNOW MORE ABOUT ALL TYPES OF ANGLERS. REMEMBER, YOU CAN NEVER BE IDENTIFIED WITH YOUR ANSWERS, SO PLEASE BE FRANK.

1. What was your AGE on your last birthday? _____

2. Indicate (✓) whether you are: [ ] Male [ ] Female

   and if you are: [ ] Married [ ] Single

3. How much formal EDUCATION have you had?

   [ ] Grade school
   [ ] High school
   [ ] Technical or vocational school
   [ ] University
   [ ] Graduate study

4. What is your main OCCUPATION? (Please describe the kinds of things you do)

   _____

   _____

5. What is your approximate annual HOUSEHOLD INCOME before taxes?

   [ ] under $15,000
   [ ] $15,000 to $29,999
   [ ] $30,000 to $44,999
   [ ] $45,000 to $59,999
   [ ] $60,000 to $74,999
   [ ] $75,000 +

THANK YOU FOR YOUR COOPERATION

- PLEASE USE THE LAST PAGE FOR COMMENTS -

APPENDIX A (cont'd)

Please use the remainder of this page to make other comments you wish (e.g availability of services and facilities, access, boat ramps fishing regulations, your bottom and salmon fishing experiences, etc.)

If you have accidentally carried this questionnaire off, please complete it at your earliest convenience and mail it to the following address:

1984 SALTWATER RECREATIONAL FISHING STUDY
P.O. Box 6418, Station C
Victoria, B.C. V8P 5M3

Tel: (604) 479-4831 (604) 595-3467

Appendix B. Summary of fishing and personal characteristics (_ _ _, p<0.05; ____, p<0.01).

	Overall	Fishing type			Avidity		
		Btm.	Mix	Smn.	<20	20-39	>39
Sample size	932	34	450	426	380	230	260
Sex							
Male	89	93.3	86.2	91.6	86.5	88.3	93.6
Female	11	6.7	13.8	8.4	13.5	11.7	6.4
Marital status							
Married	70	43.5	68.0	73.1	65.7	73.2	72.7
Single	30	56.5	32.0	26.9	34.3	26.8	27.3
Education							
Grade	5.1	6.3	6.4	3.0	4.0	7.1	4.8
High	40.2	28.1	39.8	42.6	42.0	34.6	42.2
Technical	26.2	31.3	25.9	26.2	23.9	24.6	30.7
University	21.7	25.0	21.6	21.4	23.6	24.2	17.4
Graduate	6.8	9.4	6.4	6.8	6.5	9.5	4.8
Occupation							
Laborer	10.3	7.4	8.9	11.7	10.4	9.1	11.4
Technician	27.0	29.6	28.5	25.6	27.8	24.7	27.6
Mid-management	21.9	25.9	22.3	21.3	24.0	20.7	21.3
Upper-management	18.2	18.5	16.1	20.0	18.3	21.7	15.0
Professional	3.5	0.0	3.7	3.5	3.6	5.1	2.4
Fishing industry	2.1	0.0	1.7	2.7	0.3	1.0	5.1
Other	16.2	18.5	18.6	15.2	15.7	17.7	17.2
Income (000's)							
<15	10.1	25.9	8.8	9.3	10.6	9.7	6.9
15-29.9	24.9	22.2	27.2	23.6	26.9	25.1	24.4
30-44.9	35.1	37.0	33.9	36.8	36.3	31.8	37.8
45-59.9	15.6	7.4	16.3	14.8	15.6	15.4	15.0
60-74.9	6.8	0.0	8.0	6.0	4.7	7.2	9.8
>75	7.5	7.4	5.7	9.3	5.9	10.8	6.1
Age							
<25	13.6	33.3	14.8	11.1	16.7	10.5	11.2
25-34	24.0	20.0	23.8	24.0	28.3	20.4	20.5
35-44	25.8	23.4	28.6	23.5	33.9	29.8	26.5
45-54	19.2	16.7	16.9	23.1	17.0	19.4	23.1
55-64	12.1	6.7	10.0	13.8	9.2	14.2	13.4
>65	5.4	0.0	5.7	4.5	4.9	5.7	5.2
Fishing years							
<10	23.9	29.4	24.0	23.2	30.9	22.6	14.6
10-29	51.9	50.0	51.5	44.3	48.3	55.2	53.2
>30	24.5	20.9	24.5	32.5	20.8	22.2	31.2
Skill							
Beginner	11	20.6	11.4	9.9	21.2	4.4	2.9
Intermediate	48.5	47.1	50.1	47.3	57.9	52.0	34.4
Advanced	33.4	23.5	33.4	34.0	19.0	40.6	46.2
Expert	7.1	8.8	5.1	8.7	1.9	3.1	16.5

Appendix B (cont'd)

	Overall	Fishing type Btm.	Mix	Smn.	Avidity <20	20-39	>39
Avidity							
<20	43.8	50.0	40.5	45.1			
20-39	25.3	17.7	24.5	28.6			
>40	30.8	32.3	35.0	27.3			
Driving distance							
<30	69.7	67.7	57.2	54.3	66.1	66.0	75.9
30-99	21.8	22.6	36.1	38.9	23.3	27.2	18.3
>100	7.5	9.7	8.4	6.8	9.6	6.8	5.8
Mode*							
Private boat	75.8	58.8	75.8	77.8	71.0	79.6	80.1
Charter boat	2.1	8.8	0.9	2.7	1.9	1.3	2.5
Dock/pier	0.3	2.9	0.0	0.5	0.5	0.0	0.0
Shore	1.1	2.9	0.7	1.4	1.3	0.9	0.7
Club (% yes)	15.0	17.6	13.7	15.1	10.2	13.8	20.7
Social group							
Family	38.5	25.0	43.8	33.4	38.6	38.9	37.7
Friends	50.6	56.3	47.0	54.7	52.0	54.5	48.8
Alone	8.0	15.6	7.2	8.5	6.8	10.1	9.4
Other	2.9	3.1	2.0	3.4	2.6	1.5	4.1
Satisfaction							
Not	9.0	3.6	7.8	8.5	11.8	7.7	4.5
Slightly	16.0	3.6	18.5	9.0	17.4	12.2	10.1
Moderately	47.0	67.8	44.1	41.2	45.6	47.4	43.3
Very	22.8	10.7	21.6	27.7	20.0	27.3	30.6
Extremely	5.2	14.3	8.0	12.8	5.3	4.8	11.6

*includes >75% of time category only. Responses do not sum to 100%.

Appendix B (cont'd)

	Experience			Skill		Age		
	<10	10-29	>29	Low	High	<30	30-50	>50
Sample size	219	476	224	596	372	234	405	229
Sex								
Male	79.7	91.1	92.8	83.9	95.9	89.0	90.2	89.2
Female	20.3	8.9	7.2	16.1	4.1	11.0	9.8	10.8
Marital status								
Married	66.1	63.3	86.6	71.0	67.9	29.7	81.8	91.9
Single	33.9	36.7	13.4	29.0	32.1	70.3	18.2	8.1
Education								
Grade	3.4	4.7	7.6	5.2	5.1	2.2	2.2	13.7
High	37.4	42.1	38.6	40.7	39.6	46.3	34.9	44.1
Technical	24.1	26.7	28.1	25.8	27.0	31.2	28.7	17.2
University	26.6	20.7	18.6	21.4	21.9	19.0	26.5	15.9
Graduate	8.4	5.8	7.1	6.9	6.5	1.3	7.7	9.3
Occupation								
Laborer	9.5	11.7	7.9	10.2	10.3	18.2	8.1	6.8
Technician	25.3	29.1	23.6	26.7	27.5	37.4	26.4	18.7
Mid-management	21.1	22.9	20.7	22.5	20.5	10.3	29.6	19.2
Upper-management	24.2	15.0	19.2	19.2	16.9	11.2	23.3	16.0
Professional	2.1	4.5	3.0	3.3	3.9	0.9	5.5	2.7
Fishing industry	0.0	2.1	3.9	0.2	4.8	1.4	2.6	1.8
Other	17.9	14.6	21.7	17.9	16.0	20.6	4.4	34.8
Income (000's)								
<15	9.7	11.1	7.2	8.3	12.4	26.3	2.3	8.4
15-29.9	25.9	27.1	20.6	27.6	22.0	36.4	19.2	25.2
30-44.9	36.2	35.0	34.5	37.8	31.3	23.7	40.8	34.2
45-59.9	17.3	13.3	18.0	15.9	14.9	9.1	18.2	17.3
60-74.9	4.3	5.7	11.9	4.6	10.2	3.0	8.1	8.4
>75	6.5	7.9	7.7	5.9	9.3	1.5	11.4	6.4
Age								
<25	24.6	14.8	0.9	14.2	12.7			
25-34	29.2	31.1	4.7	25.8	22.3			
35-44	26.2	27.1	23.9	27.0	24.8			
45-54	12.5	16.2	31.5	16.4	23.2			
55-64	6.0	7.2	27.2	11.6	12.4			
>65	1.5	3.6	11.7	4.8	5.6			
Fishing years								
<10				36.4	5.4	34.9	23.2	11.7
10-29				56.7	59.0	65.1	53.4	36.0
>30				16.9	35.5	0.0	23.4	52.3
Skill								
Beginner	31.7	4.9	3.1			13.8	11.2	4.4
Intermediate	59.2	48.8	37.9			47.8	47.6	49.8
Advanced	8.3	39.1	46.0			31.5	34.2	38.0
Expert	0.9	7.2	12.9			6.9	7.0	7.7

Appendix B (cont'd)

	Experience			Skill		Age		
	<10	10-29	>29	Low	High	<30	30-50	>50
Avidity								
<20	56.5	40.2	36.2	56.7	23.0	52.0	40.4	39.8
20-39	24.3	27.5	23.1	24.0	28.0	29.9	27.6	22.2
>40	19.2	32.3	40.7	19.3	49.0	18.1	32.0	38.0
Driving distance								
<30	72.4	69.5	70.5	70.7	67.2	48.3	71.3	54.5
30-99	19.1	21.3	24.0	21.5	24.4	41.2	71.4	39.1
>100	8.5	8.2	5.5	7.8	7.4	10.5	7.3	6.4
Mode*								
Private boat	75.0	74.3	80.2	75.1	76.9	65.8	80.8	81.5
Charter boat	1.9	2.4	1.8	2.1	2.2	1.8	2.8	1.9
Dock/pier	0.5	0.4	0.0	0.2	0.5	1.3	0.0	0.0
Shore	1.4	1.3	0.5	0.9	1.4	3.1	0.8	0.0
Club (% yes)	6.9	14.0	23.3	10.4	20.8	13.4	17.2	13.5
Social group								
Family	40.9	37.1	39.2	41.3	33.9	34.6	43.4	34.7
Friends	51.8	51.5	47.7	50.3	51.7	59.9	42.8	53.5
Alone	6.2	7.9	10.6	7.2	9.6	4.1	10.3	8.2
Other	1.1	3.5	2.5	1.2	4.8	1.4	3.5	3.6
Satisfaction								
Not	10.8	7.8	8.0	10.0	6.5	7.2	8.1	11.7
Slightly	18.6	12.4	13.2	18.7	7.9	14.9	12.9	16.6
Moderately	42.3	44.5	48.6	45.5	43.9	45.2	45.9	41.7
Very	23.7	26.2	24.5	21.1	31.2	23.5	26.9	22.9
Extremely	4.6	9.2	5.7	4.7	10.5	9.0	6.1	7.2

*includes >75% category only. Responses do not sum to 100%.